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Allen-Bradley

PowerFlex® Communications

USB Converter

1203-USB
FRN 1.xxx

User Manual

Rockwell Automation

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at **http://www.rockwellautomation.com/literature**) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary we use notes to make you aware of safety considerations.

WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

Important: Identifies information that is critical for successful application and understanding of the product.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid the hazard, and recognize the consequences.

Shock Hazard labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.

Burn Hazard labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be at dangerous temperatures.

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Summary of Changes

The information below summarizes the changes made to this manual since its last release (February 2006):

Description of Changes	Page(s)
In the “Performing a Flash Update with DriveExplorer” section, added an Attention in Step 8 to not remove power from the drive during flashing.	C-5
In the “Performing a Flash Update with DriveExecutive” section, added an Attention in Step 8 to not remove power from the drive during flashing.	C-10

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Related Documentation

For Information On:	Refer to:
DriveExplorer™	http://www.ab.com/drives/driveexplorer, and DriveExplorer online help (installed with the software)
DriveTools™ SP (includes DriveExecutive)	http://www.ab.com/drives/drivetools, and DriveTools SP online help (installed with the software)

Documentation can be obtained online at http://www.rockwellautomation.com/literature.

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Rockwell Automation Support

Rockwell Automation, Inc. offers support services worldwide, with over 75 sales/support offices, over 500 authorized distributors, and over 250 authorized systems integrators located through the United States alone. In addition, Rockwell Automation, Inc. representatives are in every major country in the world.

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Contact your local Rockwell Automation, Inc. representative for:

- Sales and order support
- Product technical training
- Warranty support
- Support service agreements

Technical Assistance

If you need to contact Rockwell Automation, Inc. for technical assistance, please review the information in Chapter 4, Troubleshooting first. If you still have questions, then access the Allen-Bradley Technical Support web site at www.ab.com/support/abdrives.

Conventions Used in this Manual

The following conventions are used throughout this manual:

- Parameter names are shown in the format **Parameter xx - [*]**. The xx represents the parameter number, and the * represents the parameter name — for example, **Parameter 01 - [Adapter Cfg]**.
- Menu commands are shown in bold type face and follow the format **Menu > Command**. For example, if you read “Select **File > Open**,” you should click the **File** menu and then click the **Open** command.
- The firmware release is displayed as FRN X.xxx. The “FRN” signifies Firmware Release Number. The “X” is the major release number. The “xxx” is the minor update number.

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Getting Started

The 1203-USB converter provides a communications interface between a computer and any Allen-Bradley product implementing DPI (PowerFlex 7-Class drives), DSI (PowerFlex 4-Class drives), or SCANport (1305 drives, 1336 drives, etc.). The converter uses the full-duplex, RS-232 DF1 protocol.

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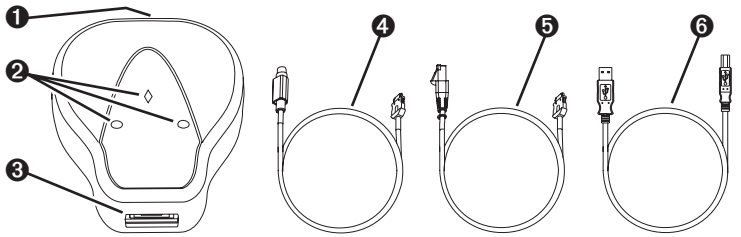
Components

Figure 1.1 Components of the Converter



Item	Part	Description
1	Computer Cable Port	The USB cable is plugged into this connector.
2	Status Indicators	LEDs that indicate converter operation, data is being received from the computer, and data is being sent to the computer. Refer to Chapter 4, Troubleshooting for more information.
3	Drive Cable Port	DPI or SCANport Drives: Plug the 20-HIM-H10 cable into this port. DSI Drives: Plug the 22-HIM-H10 cable into this port.
4	20-HIM-H10 Cable	DPI/SCANport cable (1 m) with male 26-pin-to-male 8-pin circular mini-DIN connectors.
5	22-HIM-H10 Cable	DSI cable (1 m) with male 26-pin-to-male RJ45 connectors.
6	USB Cable	USB cable (2 m) with a Type B connector to connect to the converter and a Type A connector to connect to a computer.
Not Shown	DriveExplorer Lite CD-ROM	CD that includes DriveExplorer Lite software, 1203-USB driver, and USB serial port driver.

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Features

The 1203-USB converter features the following:

- The converter can connect to products implementing DPI (PowerFlex 7-Class drives), DSI (PowerFlex 4-Class drives), or SCANport (1305 drives, 1336 drives, etc.). The converter will autobaud to the DPI, DSI, or SCANport data rate that is used by the drive.
- Provides a means for DriveExplorer (version 4.04 or higher) and DriveExecutive (version 1.01 or higher) software tools to access parameters of PowerFlex 7-Class drives, PowerFlex 4-Class drives, and SCANport drives.
- Three status indicators (LEDs) report the operating status of the converter.
- A fixed baud rate of 115.2 kbps is supported.
- The converter receives power from the host (connected) drive. An outside power source is not needed.
- A number of configuration tools can be used to configure the 1203-USB converter and connected drive:
  - PowerFlex 7-Class HIM (only DPI drives)
  - PowerFlex 4-Class HIM (only DSI drives)
  - DriveExplorer (version 4.04 or higher)
  - DriveExecutive (version 1.01 or higher)
  - Terminal emulation software
- The converter is flash upgradeable to take full advantage of new firmware features as they become available.

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Compatible Products

The 1203-USB converter can be used with Allen-Bradley products that support DPI, DSI, or SCANport. At the time of publication, compatible products include:

DPI Products

- PowerFlex 70 drives (standard and enhanced control)
- PowerFlex 700 drives (standard and vector control)
- PowerFlex 700 Series B drives
- PowerFlex 700H drives
- PowerFlex 700S drives
- PowerFlex 7000 drives
- SMC-Flex

DSI Products

- PowerFlex 4 drives
- PowerFlex 40 drives
- PowerFlex 40P drives
- PowerFlex 400 drives

SCANport Products

- 1305 AC drives (drive firmware 2.01 or higher)
- 1336 FORCE™ drives
- 1336 IMPACT™ drives
- 1336 PLUS drives
- 1336 PLUS II drives
- 1336 REGEN Line Regeneration Packages
- 1336 SPIDER drives
- 1394 Motion Systems
- 1397 DC drives
- 1557 Medium Voltage drives
- 2364 Regenerative DC Bus Supply Units
- SMC Dialog Plus™
- SMP-3 Smart Motor Protectors

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Required Equipment

Equipment Shipped with the Converter

When you unpack the converter, verify that the package includes:

- ❑ One 1203-USB converter
- ❑ One USB cable
- ❑ One 20-HIM-H10 cable
- ❑ One 22-HIM-H10 cable
- ❑ One DriveExplorer Lite CD
  (includes 1203-USB driver and USB serial port driver)
- ❑ This manual

User-Supplied Equipment

To configure the converter, you must use one of the following tools:

- ❑ PowerFlex 7-Class HIM (only DPI drives)
- ❑ PowerFlex 4-Class HIM (only DSI drives)
- ❑ DriveExplorer software (version 4.04 or higher)
- ❑ DriveExecutive stand-alone software (version 1.01 or higher) or bundled with the DriveTools SP suite (version 1.01 or higher)
- ❑ Terminal emulation software such as HyperTerminal

Safety Precautions

Please read the following safety precautions carefully.

ATTENTION: Risk of injury or equipment damage exists. Only personnel familiar with drive and power products and the associated machinery should plan or implement the installation, start-up, configuration, and subsequent maintenance of the product using the converter. Failure to comply may result in injury and/or equipment damage.

ATTENTION: Risk of injury or equipment damage exists. If the converter is transmitting control I/O to the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a connected converter.

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Quick Start

This section is provided to help experienced users quickly start using the 1203-USB converter. If you are unsure how to complete a step, refer to the referenced chapter.

Step	Action	Refer to...
1	**Review the safety precautions for the converter.**	Throughout this manual
2	**Install the converter.** DPI/SCANport Drives: Connect a 20-HIM-H10 cable to the 1203-USB converter and to the drive (see Figure 1.2). Then, connect a USB cable to the converter and to a computer. Make sure that power has been applied to the drive. DSI Drives: Connect a 22-HIM-H10 cable to the 1203-USB converter and to the drive (see Figure 1.3). Then, connect a USB cable to the converter and to a computer. Make sure that power has been applied to the drive.	Chapter 2, Installing the Converter
3	**Configure the converter for your application.** Use one of the following tools to configure parameters in the 1203-USB converter: • PowerFlex 7-Class HIM (only DPI drives) • PowerFlex 4-Class HIM (only DSI drives) • DriveExplorer (version 4.04 or higher) • DriveExecutive (version 1.01 or higher) • Terminal emulation software	Chapter 3, Configuring the Converter

Figure 1.2 Connecting the Converter to a DPI or SCANport Drive and Computer

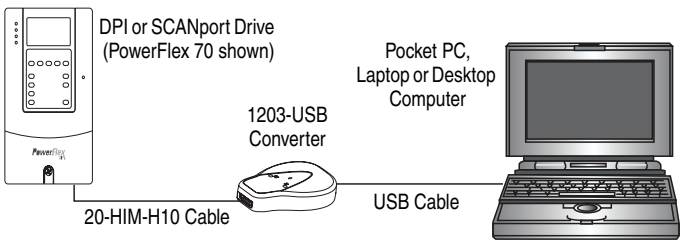
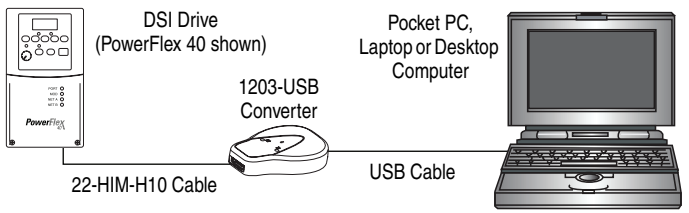


Figure 1.3 Connecting the Converter to a DSI Drive and Computer



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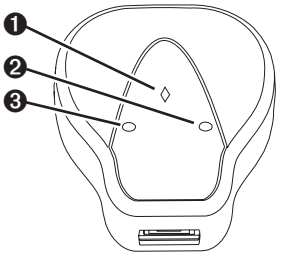
Modes of Operation

The converter reports its status using status indicators (Figure 1.4).

Figure 1.4 Status Indicators on the Converter



The following table describes the state of the status indicators under normal operation:

Item	Status Indicator	Normal State	Description
1	Diamond	Flashing Green	Converter is connected to a compatible product.
		Solid Green	Converter is or was receiving control I/O. Removing or resetting the converter may cause a fault in the host product.
		Off	No power or a flash update is in progress.
2	TX	Off	Not transmitting data.
		Flashing Green	Transmitting data.
3	RX	Off	Not receiving data.
		Flashing Green	Receiving data.

If the diamond status indicator is red, there is a problem. Refer to Chapter 4, Troubleshooting.

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Installing the Converter

Chapter 2 provides instructions for installing and removing the 1203-USB converter.

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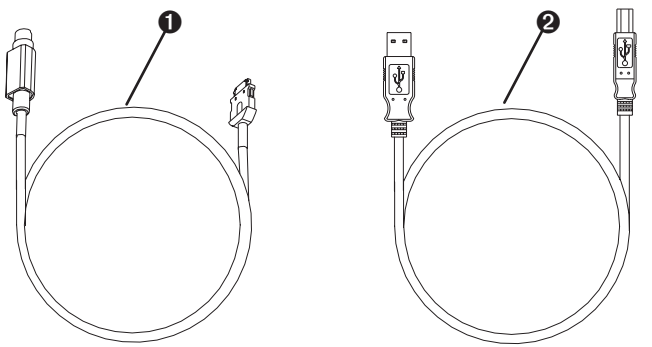
Selecting Cables

Only two of the three supplied cables are required to install the 1203-USB converter. Always use the USB cable to connect the converter to the computer. Of the two remaining cables, use the 20-HIM-H10 cable to connect the converter to a DPI or SCANport drive, or the 22-HIM-H10 cable to connect the converter to a DSI drive. (For a list of compatible drive types, please refer to Page 1-3.)

Figure 2.1 Cables for Connecting to a DPI or SCANport Drive and Computer



Item	Description	Catalog Number
❶	DPI/SCANport cable to connect the converter to a DPI drive or SCANport drive.	20-HIM-H10
❷	USB cable to connect the converter to the computer.	—

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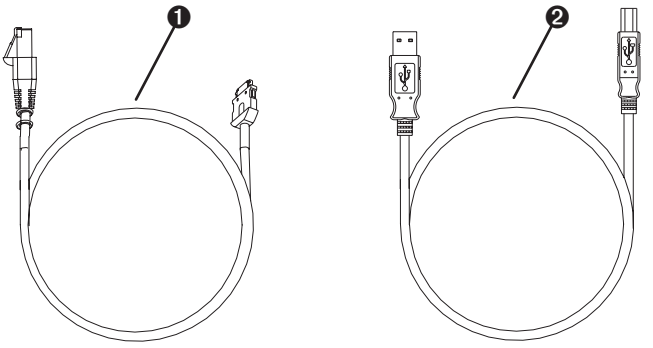
Figure 2.2 Cables for Connecting to a DSI Drive and Computer



Item	Description	Catalog Number
❶	DSI cable to connect the converter to a DSI drive.	22-HIM-H10
❷	USB cable to connect the converter to the computer.	—

Important: The DSI cable shield must be properly grounded to provide EMC protection. On a PowerFlex 4-Class drive, Pin 16 of the drive control terminal block must be connected to the drive earth ground terminal.

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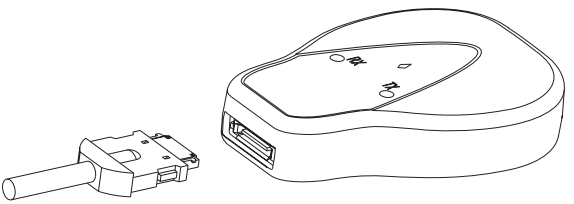
Installing the Converter

Important: The converter **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the converter is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.

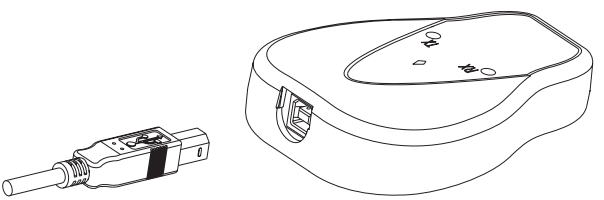
1. Connect the converter to the drive (Figure 2.3) using the appropriate cable (20-HIM-H10 cable for a DPI drive or SCANport drive, or 22-HIM-H10 cable for a DSI drive).

Figure 2.3 Connecting the Converter to the Drive



2. Connect the converter to the computer (Figure 2.4) using the USB cable. Verify that power is applied to the drive. The 1203-USB converter receives power from the drive, so the drive must be powered before the converter will operate.

Figure 2.4 Connecting the Converter to the Computer



The diamond light on the converter flashes green to indicate that the converter is properly installed and receiving power. If it is not green, refer to Chapter 4, Troubleshooting.

3. After approximately 30-60 seconds, the computer will display the "Found New Hardware Wizard" screen. Install the drivers for the 1203-USB and USB serial port on your computer by following the procedure described in Installing the USB Drivers on page 2-4.

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Installing the USB Drivers

Drivers for the 1203-USB converter and USB serial port are provided on the DriveExplorer Lite CD supplied with the converter. These drivers must be installed on your computer to enable the computer to recognize the 1203-USB when using DriveExplorer, DriveExecutive, or Windows XP HyperTerminal.

1. After connecting the 1203-USB converter to a powered drive and to the computer, the USB Converter "Found New Hardware Wizard" screen (Figure 2.5) should appear.

Figure 2.5 USB Converter Found New Hardware Wizard Screen

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USB Converter
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

2. Insert the DriveExplorer Lite CD into your computer. The DriveExplorer Setup screen appears while the computer automatically searches for and loads the 1203-USB driver from the inserted CD.

3. Keep the DriveExplorer Lite CD inserted in the computer. On the DriveExplorer Setup screen, click **Close**.

4. After the 1203-USB driver has been successfully installed, a confirmation screen (Figure 2.6) appears. Click **Finish**.

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Figure 2.6 Completing the Found New Hardware Wizard Screen

5. After approximately 20 seconds, the USB Serial Port "Found New Hardware Wizard" screen (Figure 2.7) should appear.

Figure 2.7 USB Serial Port Found New Hardware Wizard Screen

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
USB Serial Port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

6. With the "Install the software automatically (Recommended)" radio button selected (Figure 2.7), click **Next >**. The computer automatically searches for and loads the USB Serial Port driver from the inserted DriveExplorer Lite CD.

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7. After the USB Serial Port driver has been successfully installed, a confirmation screen (Figure 2.8) appears. Click **Finish**.

Figure 2.8 USB Serial Port Completing the Found New Hardware Wizard Screen

Installing DriveExplorer Lite

If you intend to use DriveExplorer Lite as your configuration tool, you can install it while the DriveExplorer Lite CD is still inserted in your computer. Launch the DriveExplorer Lite CD to display the DriveExplorer Setup screen to install the software.

Removing the Converter

ATTENTION: Risk of injury or equipment damage exists. If the converter is transmitting control I/O to the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a connected converter.

1. Disconnect the cable from the drive, and then from the converter. To disconnect the cable, press on the cable latch and then pull it out.

2. Disconnect the USB cable from the converter, and then from the computer.

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Configuring the Converter

Chapter 3 provides instructions and information for configuring the 1203-USB converter.

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For a list of parameters, please refer to:

- Parameter List for DPI Drives on page B-1
- Parameter List for DSI Drives on page B-2.
- Parameter List for SCANport Drives on page B-4

For definitions of terms in this chapter, refer to the Glossary.

Configuration Tools

The 1203-USB converter stores parameters and other information in its own Non-Volatile Storage (NVS) memory. You must, therefore, access the converter to view and edit its parameters. The following tools can be used to access the converter parameters:

Tool	Refer to...
PowerFlex 7-Class HIM (20-HIM-*) — DPI drives only	Page 3-2
PowerFlex 4-Class HIM (22-HIM-*) — DSI drives only	Page 3-3
DriveExplorer Software (version 4.04 or higher)	Page 3-4
DriveExecutive Software (version 1.xx or higher)	Page 3-6
Terminal emulation software	Page 3-11

Important: The RS-485 serial port on DSI drives (PowerFlex 4-Class drives) does not need to be configured before using the converter. DSI communications are configured automatically (19.2K baud and 8-N-1).

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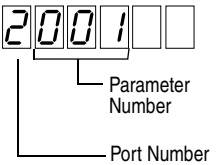
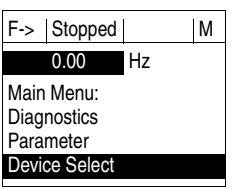
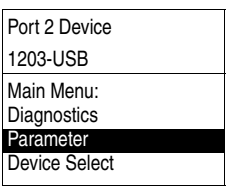
Using the PowerFlex 7-Class HIM (Only DPI Drives)

If you are connected to a PowerFlex 7-Class drive and it has an LED or LCD HIM (Human Interface Module), you can use the HIM to access and edit parameters in the 1203-USB converter (see basic steps shown below). It is recommended that you read through the steps for your HIM before performing the sequence. For additional HIM information, refer to your PowerFlex Drive User Manual or the HIM Quick Reference card.

LED HIM Quick Start

Step	Key(s)	Example Screens
1. Press ALT and then Sel (Device) to display the Device Screen.	Device ALT Sel	
2. Press the Up Arrow or Down Arrow to scroll to the 1203-USB converter. Letters represent files in the drive, and numbers represent ports. The converter is usually connected to port 2 (the external port) and sometimes to port 3 (available with a splitter).	▲ OR ▼	
3. Press the Enter key to enter your selection. The first parameter for the 1203-USB converter will appear.	↵	
4. Edit the parameters using the same techniques that you use to edit drive parameters.		

LCD HIM Quick Start

Step	Key(s)	Example Screens
1. In the main menu, press the Up Arrow or Down Arrow to scroll to **Device Select**.	▲ OR ▼	
2. Press Enter to enter your selection.	↵	
3. Press the Up Arrow or Down Arrow to scroll to **1203-USB**.	▲ OR ▼	
4. Press Enter to select the converter. The menu for the 1203-USB converter will appear.	↵	
5. Edit the parameters using the same techniques that you use to edit drive parameters.		

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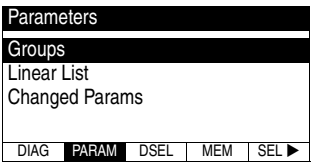
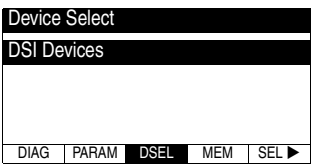
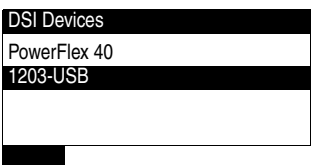
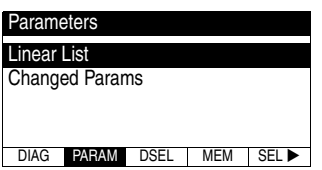
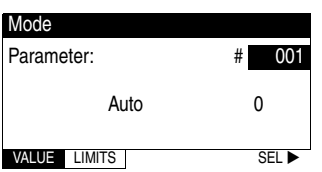
Using the PowerFlex 4-Class HIM (Only DSI Drives)

If you are connected to a PowerFlex 4-Class drive, you can use a PowerFlex 4-Class HIM (Human Interface Module) to access and edit parameters in the 1203-USB converter (see basic steps shown below). It is recommended that you read through the steps for your HIM before performing the sequence. For additional HIM information, refer to the HIM Quick Reference card.

Using the HIM

Step	Key(s)	Example Screens
1. Power up the drive. Then plug the HIM into the drive. The **Parameters** menu for the drive will be displayed.		
2. Press Sel key once to display the **Device Select** menu.		
3. Press Enter to display the **DSI Devices** menu. Press Down Arrow to scroll to **1203-USB**.		
4. Press Enter to select the converter. The **Parameters** menu for the converter will appear.		
5. Press Enter to access the parameters. Edit the adapter parameters using the same techniques that you use to edit drive parameters.		

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Using DriveExplorer

Using DriveExplorer software (version 4.04 or higher), you can edit parameters in both the 1203-USB converter and the connected drive. With DPI and DSI drives, you can also edit parameters in any of their attached peripherals. DriveExplorer Lite is shipped with the 1203-USB converter. It is a free, limited-feature version of DriveExplorer.

Important: For DSI drives, converter **Parameter 01 - [Adapter Cfg]** must be set to "Auto" (default) for DriveExplorer to operate. If this parameter needs to be changed, HyperTerminal can be used to configure the converter (see Using Terminal Emulation Software on page 3-11).

DriveExplorer Lite Quick Start

This section is designed to help you start using DriveExplorer Lite. If you are unsure how to complete a step, refer to the software online help (select **Help > Help Topics**).

1. Obtain and note the COM port that was assigned during installation of the 1203-USB driver. To do this:

   A. Open the Windows Control Panel and double-click on System.

   B. In the System Properties window, click on the Hardware tab and then click Device Manager.

   C. In the Device Manager treeview, expand the Port (COM & LPT) group. The assigned COM port is shown in parenthesis at the end of the Allen-Bradley 1203-USB entry.

2. If it is not already running, launch DriveExplorer Lite (or the full version of DriveExplorer).

3. In the DriveExplorer Lite application window, select **Explore > Configure Communication**. Select the COM port noted in Step 1 and a baud rate of "115200." Select either checksum, and accept the default time for the Comm. Timeout. Then click **OK**.

4. Select **Explore > Connect > Serial Point-to-Point**. A node eventually appears in the DriveExplorer Parameter List Window (Figure 3.1) under Devices in the treeview.

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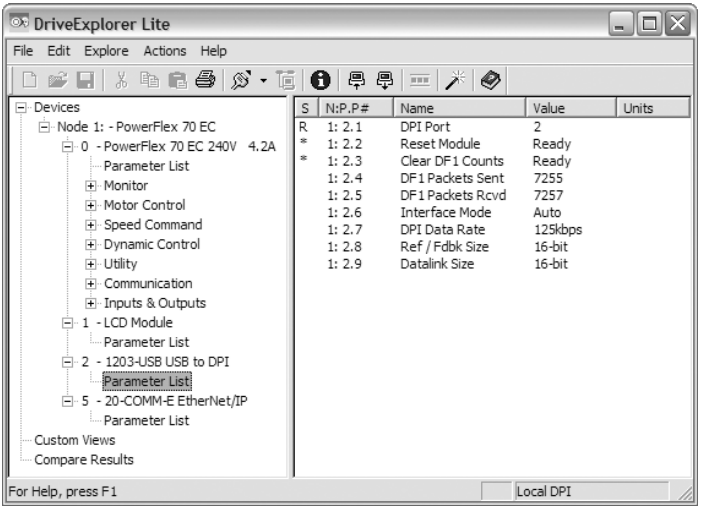
Figure 3.1 DriveExplorer Parameter List Window



5. In the left pane, click the Parameter List for the 1203-USB converter or connected drive to display its parameters in the right pane. Double-click a parameter to edit it.

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Using DriveExecutive

Using DriveExecutive software (version 1.xx or higher), you can edit parameters in both the 1203-USB converter and the connected drive. With DPI and DSI drives, you can also edit parameters in any of their attached peripherals.

Important: For DSI drives, converter **Parameter 01 - [Adapter Cfg]** must be set to "Auto" (default) for DriveExecutive to operate. If this parameter needs to be changed, HyperTerminal can be used to configure the converter (see Using Terminal Emulation Software on page 3-11).

This section is designed to help you start using DriveExecutive. If you are unsure how to complete a step, refer to the software online help (select **Help > Help Topics**).

1. Obtain and note the COM port that was assigned during installation of the 1203-USB driver. To do this:

   A. Open the Windows Control Panel and double-click on System.

   B. In the System Properties window, click on the Hardware tab and then click Device Manager.

   C. In the Device Manager treeview, expand the Port (COM & LPT) group. The assigned COM port is shown in parenthesis at the end of the Allen-Bradley 1203-USB entry.

2. Launch RSLinx to create a driver to represent the connection on the communication port noted in Step 1.

3. Select **Communications > Configure Drivers…** to display the Configure Drivers screen. From the Available Driver Types pulldown list, select "RS-232 DF1 devices" as shown in Figure 3.2.

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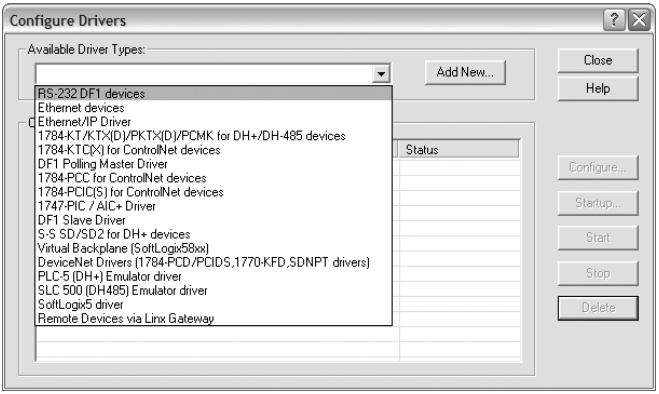
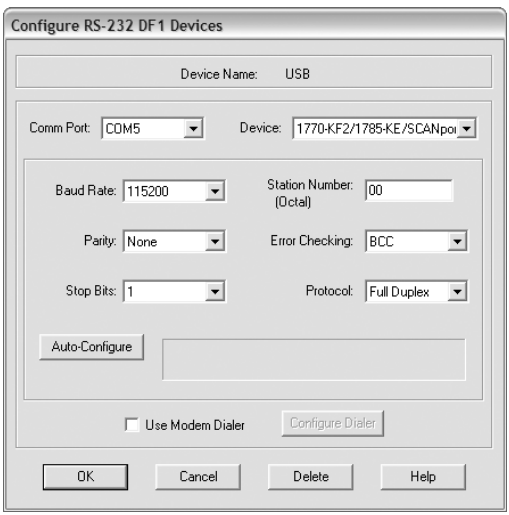
Figure 3.2 Configure Drivers Screen



4. After the driver is selected, click the **Add New…** button. The Add New RSLinx Driver screen will appear. Create a name for the new driver (for example, 1203-USB) or use the default name, and click **OK**.

5. The Configure RS-232 DF1 Devices window (Figure 3.3) appears.

Figure 3.3 Configure RS-232 DF1 Devices Window



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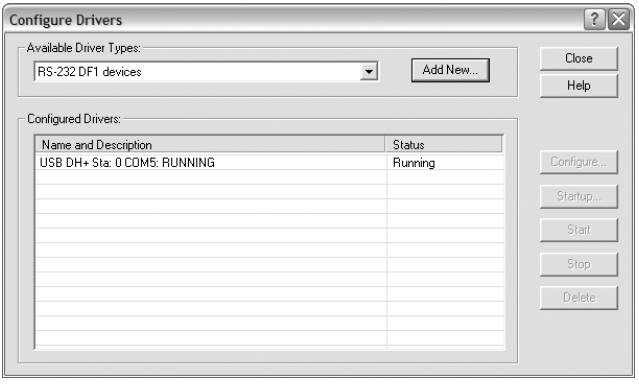
Use the following settings for the Configure RS-232 DF1 Devices window:

Configuration Field	Setting
Comm Port	Select the same COM port established during installation of the 1203-USB driver (noted in Step 1 on Page 3-6). For this example, COM5 is used.
Device	1770-KF2/1785-KE/SCANport
Baud Rate	115200
Station Number	00 (default)
Parity	None (default)
Error Checking	BCC (default)
Stop Bits	1 (default)
Protocol	Full Duplex (default)

Then click **OK.**

6. The Configure Drivers window (Figure 3.4) will re-appear. Verify that the status of the newly created driver is "Running." Then click **Close**.

Figure 3.4 Configure Drivers Window



7. Select **Communications > RSWho** to display the browse window. Then expand the treeview in the left pane to display the "DPI" icon to verify that the driver is communicating with the device. The screen should look similar to Figure 3.5.

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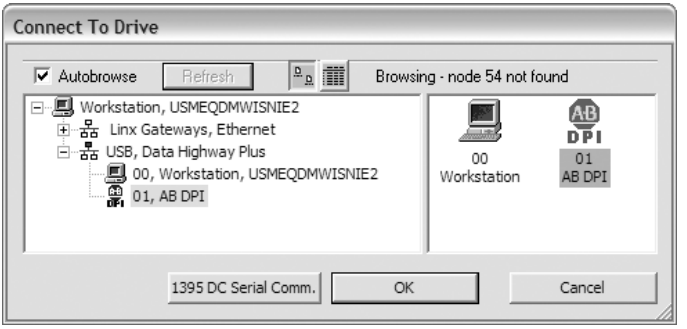
Figure 3.5 RSLinx Browse Window

8. Launch DriveExecutive to access parameters in the 1203-USB converter, the connected drive, and any connected peripherals.

9. In the DriveExecutive window, select **Drive > Connect to Drive…** to display the Connect To Drive treeview window. Then expand the treeview in the left pane to display the "DPI" icon. The screen should look similar to Figure 3.6.

Figure 3.6 Connect To Drive Window



10. Select the DPI icon in the right pane and then click **OK**. DriveExecutive will begin updating drive information such as parameter names, diagnostics, etc. and store them in a DriveExecutive directory established for this purpose.

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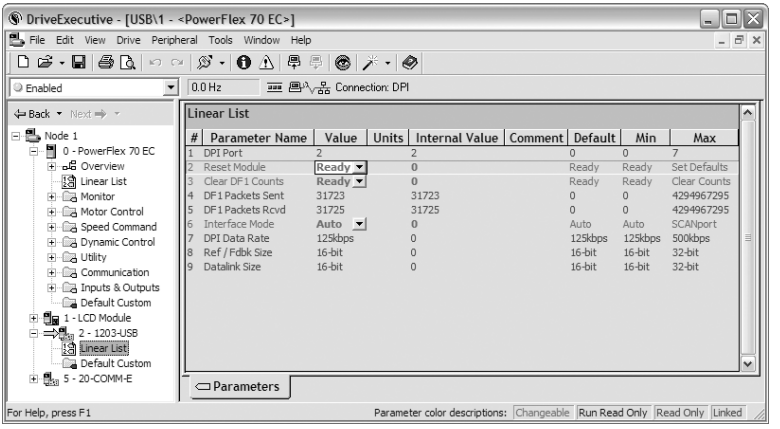
11. In the left pane of the DriveExecutive treeview window, click the + signs to expand the tree. For this example, click on “1203-USB” and click “Linear List” to display its parameters in the right pane (Figure 3.7). To edit a parameter, double-click it or use the Value column pulldown menu.

Figure 3.7 DriveExecutive Treeview Window


DriveExecutive - [USB\1 - <PowerFlex 70 EC>]
File Edit View Drive Peripheral Tools Window Help
Enabled
0.0 Hz
Connection: DPI
Back Next
Node 1
0 - PowerFlex 70 EC
Overview
Linear List
Monitor
Motor Control
Speed Command
Dynamic Control
Utility
Communication
Inputs & Outputs
Default Custom
1 - LCD Module
2 - 1203-USB
Linear List
Default Custom
5 - 20-COMM-E
Linear List
Parameter Name Value Units Internal Value Comment Default Min Max
1 DPI Port 2 2 0 0 7
2 Reset Module Ready 0 Ready Ready Set Defaults
3 Clear DF1 Counts Ready 0 Ready Ready Clear Counts
4 DF1 Packets Sent 31723 31723 0 0 4294967295
5 DF1 Packets Rcvd 31725 31725 0 0 4294967295
6 Interface Mode Auto 0 Auto Auto SCANport
7 DPI Data Rate 125kbps 0 125kbps 125kbps 500kbps
8 Ref / Fdbk Size 16-bit 0 16-bit 16-bit 32-bit
9 Datalink Size 16-bit 0 16-bit 16-bit 32-bit
Parameters
For Help, press F1
Parameter color descriptions: Changeable Run Read Only Read Only Linked

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Using Terminal Emulation Software

This section provides detailed instructions on how to use terminal emulation software to access the 1203-USB converter so that you can view and edit its parameters or view its event queue.

A variety of terminal emulation programs can be used to establish a USB connection between a computer and the converter. The following instructions describe how to establish the initial USB connection to the converter using a computer running HyperTerminal — terminal emulation software provided with most Windows operating systems.

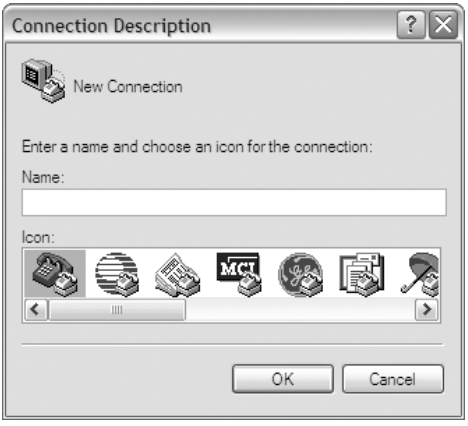
Important: The following instructions use screen captures from Windows XP HyperTerminal. If you are using a different operating system, the screens may differ.

To use HyperTerminal to access the converter

1. Verify that the converter is installed correctly. Refer to Chapter 2, Installing the Converter.

2. On the Windows XP desktop, click the **Start** button, and then select **All Programs > Accessories > Communications > HyperTerminal** to display the Connection Description screen (Figure 3.8).

Figure 3.8 Connection Description Screen



3. In the Name field, type a desired name (for example, 1203-USB), and then select a desired icon in the Icon window.

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4. Click **OK** to display the Connect To screen (Figure 3.9).

Figure 3.9 Connect To Screen

5. From the "Connect using" pulldown list, select the communications port noted in Step 1 on Page 3-4.

6. Click **OK** to display the COM Properties screen (Figure 3.10).

7. Select the settings shown in Figure 3.10.

Figure 3.10 COM Properties Screen

8. Click **OK**. A blank HyperTerminal workspace appears.

TIP: Select **File > Save** to save the HyperTerminal configuration that you just created. In future connections, you can select the saved configuration and quickly connect to the 1203-USB converter.

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9. Press the **Enter** key until the main menu (Figure 3.11) appears.

Figure 3.11 Main Menu

```
Main Menu - Enter Number for Selection
1> Display Setup Parameters
2> Display Event Queue
3> Flash Upgrade
```

What do you want to do?	Refer to…
View the event queue	Page 4-4
View DF1 data	Page 4-7
Update the firmware	Page C-1

If no text or meaningless text appears instead of the Main Menu, it is possible that a baud rate other than "115200" was selected. See Step 7 on Page 3-12.

To navigate in the terminal emulation software

Key	Description
0 · · · 9	In the main menu, keys 1 – 3 select a menu option. In the parameter screen, keys 0– 9 enter a value.
Esc	Display the main menu or abort changes to a parameter.
↑ OR ↓	Scroll through parameters or events.
→ OR ←	Scroll through the values for a parameter.
Enter	Save a value for a parameter.

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Resetting the Converter

Changes to settings of some 1203-USB converter parameters require that you reset the converter before the new settings take effect. You can reset the converter by cycling power to the drive or by using **Parameter 02 - [Reset Module]**.

ATTENTION: Risk of injury or equipment damage exists. If the converter is transmitting control I/O to the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a connected converter.

To reset the converter

Set **Parameter 02 - [Reset Module]** to **Reset Module**.

Figure 3.12 Reset Module Parameter in HyperTerminal

```
Press the UP ARROW or DOWN ARROW key to scroll
through the parameter list. Press the LEFT ARROW
or RIGHT ARROW key to modify parameter values.
Press the ENTER key to save a new value.

2> Reset Module = Reset Module
```

When you select **Reset Module**, the converter will be immediately reset. When you select **Set Defaults**, the converter will set all converter parameters to their factory-default values. After performing a Set Defaults, select **Reset Module** so that the new values take effect. The value of this parameter will be restored to **Ready** after the converter is reset.

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Troubleshooting

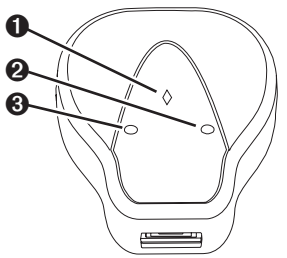
Chapter 4 provides information for troubleshooting potential problems with the 1203-USB converter.

Topic	Page
Understanding the Status Indicators	4-1
Converter Diagnostic Items	4-3
Viewing and Clearing the Event Queue	4-4
Viewing and Clearing DF1 Communication Statistics	4-7
Troubleshooting Potential Problems	4-8

Understanding the Status Indicators

The converter has three status indicators to report its operating status. See Figure 4.1.

Figure 4.1 Status Indicators on the Converter



Item	Status Indicator	Description	Page
1	Diamond	Status of converter.	4-2
2	TX	Converter is transmitting data.	4-2
3	RX	Converter is receiving data.	4-2

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Diamond Status Indicator

ATTENTION: Risk of injury or equipment damage exists. If the converter is transmitting control I/O to the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a converter.

Status	Cause	Corrective Action
Off	Converter is not powered, or is in Flash programming mode.	• Securely connect cables. • Apply power to the drive. • Wait until Flash update is completed.
Flashing Green	Converter is operating and not transmitting control I/O.	No action required. Removing or resetting the converter will not cause a fault in the drive.
Solid Green	Converter is operating and is or was transmitting control I/O.	No action required. Removing or resetting the converter will cause a fault in the drive. For DPI drives only, a “Soft Logout” can be performed to allow removal of the converter without a fault occurring. To do this, set the logic mask in the drive to ignore the converter and then verify that the drive is receiving its Logic Command and Reference from another source.
Flashing Red	The drive has not acknowledged the converter.	• Securely connect cables. • DPI or SCANport Drives: Verify that converter **Parameter 06 - [Interface Mode]** is set to “Auto.” • DSI Drives: Verify that converter **Parameter 01 - [Adapter Cfg]** is set to “Auto.”
	The drive was disconnected from the computer, or the computer was turned off.	• Securely connect cables. • Turn on the computer.
Solid Red	Link failure.	• Securely connect cables. • Replace the cable. • Cycle power to the drive.

RX Status Indicator

Status	Cause	Corrective Action
Off	Converter is not receiving data.	• Verify that data is being transmitted by the PC. • Securely connect cables. • Apply power to the drive. • Configure the computer software to use the same port rate as the converter.
Flashing Green	Converter is receiving data from the computer.	No action required.

TX Status Indicator

Status	Cause	Corrective Action
Off	Converter is not transmitting data.	• Verify that data is being transmitted. • Securely connect cables. • Apply power to the drive.
Flashing Green	Converter is transmitting data to the computer.	No action required.

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Converter Diagnostic Items

Converter diagnostic items can be viewed using DriveExplorer (version 4.04 or higher). If you encounter unexpected communication problems, diagnostic items can help you or Allen-Bradley personnel troubleshoot the problem.

For DPI Drives

No.	Name	Description
1	Common Logic Cmd	Present value of the Common Logic Command being transmitted to the drive by the converter.
2	Prod Logic Cmd	Present value of the Product Specific Logic Command being transmitted to the drive by the converter.
3	Reference	Present value of the Product Specific Reference being transmitted to the drive by the converter.
4	Common Logic Sts	Present value of the Common Logic Status being received from the drive by the converter.
5	Prod Logic Sts	Present value of the Product Specific Logic Status being received from the drive by the converter.
6	Feedback	Present value of the Product Specific Feedback being received from the drive by the converter.
7	DPI Rx Errors	Present value of the DPI CAN Receive Error Counter register.
8	DPI Rx Error Max	Maximum value of the DPI CAN Receive Error Counter register.
9	DPI Tx Errors	Present value of the DPI CAN Transmit Error Counter register.
10	DPI Tx Error Max	Maximum value of the DPI CAN Transmit Error Counter register.
11	Field Flash Cntr	Present value of the Field Flash Counter.

For DSI Drives

No.	Name	Description
1	Field Flash Cnt	Number of times the module has been Field Flashed.
2	Adapter Events	Number of events in the event queue.
3	Reference	Present value of the Reference being transmitted to the drive by the converter.
4	Logic Cmd	Present value of the Logic Command being transmitted to the drive by the converter.
5	Logic Sts	Present value of the Logic Status being received from the drive by the converter.
6	Feedback	Present value of the Feedback being received from the drive by the converter.
7	Clear DSI Counts	Clears the DSI counters.
8	DSI Packets Sent	DSI (Modbus) packets sent by the converter.
9	DSI Packets Rcvd	DSI (Modbus) packets received by the converter.
10	DSI Bad Packet	DSI packets received with a bad Cyclic Redundancy Check (CRC).
11	DSI Retries	Number of times a DSI received no response and was re-sent.

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For SCANport Drives

Diagnostic items are not supported by SCANport drives.

Viewing and Clearing the Event Queue

The converter maintains an event queue that reports the history of its actions.

To view the event queue

1. Access the event queue using a configuration tool (see Configuration Tools on page 3-1).
2. Scroll through events in the event queue. The most recent event can be found at **2R > Event Queue 1**. The "R" stands for Read Only.

Figure 4.2 Example Event Queue in HyperTerminal

```
Press the UP ARROW or DOWN ARROW key to scroll
through the parameter list. Press the LEFT ARROW
or RIGHT ARROW key to modify parameter values.
Press the ENTER key to save a new value.

2R> Event Queue 1 = Normal Startup
```

Events

Many events in the Event queue occur under normal operation. If you encounter unexpected communications problems, the events may help you or Allen-Bradley personnel troubleshoot the problem. The following events may appear in the event queue:

For DPI Drives

Events	Description
Control Disabled	The converter has sent a "Soft Control Disable" command to the DPI drive.
Control Enabled	The converter has sent a "Soft Control Enable" command to the DPI drive.
DPI Bus Off Flt	A bus-off condition was detected on DPI. This event may be caused by loose or broken cables, or by noise.
DPI Fault Clear	A DPI drive has issued a fault clear message.
DPI Fault Msg	The drive entered a faulted state.

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Events	Description
Dup. Port Flt	Another peripheral with the same port number is already in use.
EEPROM Sum Flt	The EEPROM in the converter is corrupt.
Host Sent Reset	The DPI drive issued this because it was reset.
Message Timeout	The DPI drive did not respond to a message request. Verify that cabling is correct.
No Event	No event present in the event queue.
Normal Startup	The converter initially powered up or was reset.
Online @ 125kbps	The converter and DPI drive are communicating at 125kbps.
Online @ 500kbps	The converter and DPI drive are communicating at 500kbps.
PCCC I/O Time Flt	The converter has not received a PCCC Control message for longer than the specified PCCC Control Time-out.
Ping in Message	An unexpected ping was received.
Ping Time Flt	A ping message was not received on DPI within the specified time.
Port Change Flt	The DPI port changed.
Port ID Flt	The converter is not connected to a correct port on a DPI drive.
Type 0 Login	The converter has logged in for type 0 control.
Type 0 Time Flt	The converter has not received a type 0 status message within the specified time.
Use I/O Sent	The converter has begun sending drive-specific control information.

For DSI Drives

Code	Event	Description
F0	No Event	No event present in the event queue.
F1	Adapter Reset	The converter was reset by the user.
F2	Slave Detected	A slave was detected to be present by the master.
F3	Slave Removed	A slave was detected to be removed by the master.
F4	Host Timeout	A timeout condition on Msg to Host.
F5	Slave Timeout	A timeout condition on Msg to Slave.
F6	Master Timeout	A timeout condition on Msg to Master.
F7	Serial Timeout	A timeout on Serial 232 side (with control enabled).
F8	Control Enabled	The converter has sent a “Soft Control Enable” command to the drive.
F9	Control Disabled	The converter has sent a “Soft Control Disable” command to the drive.
F10	EEPROM Sum Flt	Startup sequence detected corrupt EEPROM storage in the converter.

For SCANport Drives

Events	Description
Adapter Reset	The converter was reset or power cycled.
Clear SP Fault	The SCANport drive issued this because a fault was cleared in it.
Clear SP Warning	The SCANport drive issued this because a warning was cleared.
Empty Queue	The queue does not contain any recorded events.
Message Timeout	The SCANport drive did not respond to a message request. Verify that cabling is correct.

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Events	Description
No SCANport Ping	The converter issued this because no SCANport pings were detected within a 2 second period. This event may be caused by a disconnected or broken cable, a broken converter, or a malfunction in the SCANport drive.
Pin ID Change	The converter issued this because the SCANport Pin ID was changed. This event is normal after a power cycle or reset.
SCANport Bus Off	The converter issued this because its SCANport CAN chip went bus off. This event may be caused by loose or broken cables, or by noise.
SCANport Fault	The SCANport drive issued this because it was faulted. See its fault queue.
SCANport Reset	The SCANport drive issued this because it was reset.
SCANport Warning	The SCANport drive issued this because it had a warning.
SP Pin ID = 7	The converter issued this because its Pin ID has a value of 7. It should have a value between 1 and 6. This event may be caused by a loose or broken cable.

To clear the event queue

1. Access the 1203-USB event queue using a configuration tool (see Configuration Tools on page 3-1).

2. Set the **1 > Clr Event Queue** parameter to **Enable**, and then press **Enter** to clear the event queue.

Figure 4.3 Reset Event Queue in HyperTerminal

```
Press the UP ARROW or DOWN ARROW key to scroll
through the parameter list. Press the LEFT ARROW
or RIGHT ARROW key to modify parameter values.
Press the ENTER key to save a new value.

1> Clr Event Queue = Enable
```

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Viewing and Clearing DF1 Communication Statistics

If you encounter unexpected communications problems or are creating an application that uses DF1 data, you can view the communications statistics stored in the converter.

To view and clear DF1 data, you must access the main menu in the 1203-USB converter firmware.

To view DF1 data

1. Access the parameters in the converter using a configuration tool (see Configuration Tools on page 3-1).

2. View the converter parameters that store DF1 data: **Parameters 04 - [DF1 Packets Sent]** and **05 - [DF1 Packets Rcvd]**. For a description of each parameter, please refer to:

   - Parameter List for DPI Drives on page B-1
   - Parameter List for DSI Drives on page B-2
   - Parameter List for SCANport Drives on page B-4.

Figure 4.4 Example Parameter 04 Display in HyperTerminal

```
Press the UP ARROW or DOWN ARROW key to scroll
through the parameter list. Press the LEFT ARROW
or RIGHT ARROW key to modify parameter values.
Press the ENTER key to save a new value.

4R> DF1 Packets Sent = 0
```

To clear DF1 data counters

1. Access the parameters in the converter using a configuration tool (see Configuration Tools on page 3-1).

2. View converter **Parameter 03 - [Clear DF1 Counts]**. Then set its value to **Clear Counts**, and press **Enter** to clear the DF1 data.

Figure 4.5 Example Parameter 03 Display in HyperTerminal

```
Press the UP ARROW or DOWN ARROW key to scroll
through the parameter list. Press the LEFT ARROW
or RIGHT ARROW key to modify parameter values.
Press the ENTER key to save a new value.

3> Clear DF1 Counts = Clear Counts
```

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Troubleshooting Potential Problems

Description	Action
You are unable to establish a connection between the computer and converter.	• If the converter status indicators are off, connect the cables and apply power to the drive. • Configure your software tool to use the correct virtual COM port and port (baud) rate.
After changing the software tool's port rate, you are no longer able to communicate with the converter and connected drive. For example, in HyperTerminal, meaningless text appears on the screen when you press Enter. In DriveExplorer, parameter values are not updated.	Reset the port rate in the software tool. Instructions are included here to reset the port rate in HyperTerminal and DriveExplorer. If you are using a different configuration tool, refer to its instructional information. **HyperTerminal** 1. Select **File > Properties**, and then click **Configure**. 2. Select the new baud rate, and then click **OK**. 3. Save and close HyperTerminal. 4. Double-click on your HyperTerminal file (*.ht) to restart HyperTerminal. 5. Press **Enter** until the main menu appears. **DriveExplorer** 1. Select **Explore > Configure Communication**. 2. Select the new baud rate. DriveExplorer should start updating values again. If not, restart DriveExplorer.
No communications to the drive.	• Verify cable connections. • DPI or SCANport Drives: Verify that converter **Parameter 06 - [Interface Mode]** is set to "Auto." • DSI Drives: Verify that converter **Parameter 01 - [Adapter Cfg]** is set to "Auto."
When using DriveExplorer v3.xx or lower or DriveTools32 v2.xx, you cannot communicate because the correct baud rate of 115200 for the virtual port cannot be selected.	Use these later software tool versions which are compatible with the converter: • DriveExplorer v4.04 or higher • DriveTools SP v1.xx or higher
When using DriveTools 2000 v1.xx (or higher), you cannot perform any of the following: 1. Route out over a network, such as DeviceNet, to another drive. 2. Access DPI peripherals such as the 20-COMM-D DeviceNet adapter. Access 32-bit data.	• DPI or SCANport Drives: Verify that converter **Parameter 06 - [Interface Mode]** is set to "Auto." • DSI Drives: Verify that converter **Parameter 01 - [Adapter Cfg]** is set to "Auto." • Reset the converter (see Resetting the Converter on page 3-14).
You are connected to a DSI drive, converter **Parameter 01 - [Adapter Cfg]** is set to "4" (RTU Passthru), and the diamond status indicator is flashing red.	Power cycle the drive to which the converter is connected. Then do one of the following: • HyperTerminal – Connect to the drive through the converter. Then simultaneously press the Ctrl and P keys as your initial command (instead of Enter). • DriveExplorer (v4.04 or higher) – Connect to the drive through the converter.

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Specifications

Appendix A presents the specifications for the 1203-USB converter.

Topic	Page
Communications	A-1
Electrical	A-1
Mechanical	A-1
Environmental	A-2
Agency Certification	A-2

Communications

Network side			
Protocol	Universal Serial Bus (USB)		
Port Rate	115.2 kbps		
Data Bits	8		
Parity	None		
Stop Bits	1		
Flow Control	None		
Error	CRC or BCC (Auto-Detected)		
Drive side			
Protocol	DPI	DSI	SCANport
Data Rates (bps)	125K/500K	19.2K	125K

Electrical

Consumption	DPI or SCANport Drive: 130 mA at +12V DC DSI Drive: 170 mA at +5V DC The converter draws the required power from the connected drive. An external power source is not required.

Mechanical

Dimensions	
Height	103.5 mm (4.08 inches)
Width	73.4 mm (2.89 inches)
Depth	23.6 mm (0.93 inches)
Weight	70.88 g (2.5 oz.)

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Environmental

Temperature Operating Storage	 0 to 50°C (32 to 122°F) -40 to 85°C (-40 to 185°F)
Relative Humidity	5 to 95% non-condensing
Atmosphere	**Important:** The converter **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the converter is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.
Vibration Operating Non-Operating	 2.5 G @5Hz-2KHz 5 G @5Hz-2KHz
Shock Operating Non-Operating	 30 G peak acceleration, 11 (±1) ms pulse width 50 G peak acceleration, 11 (±1) ms pulse width

Agency Certification

UL	UL508C
cUL	CAN / CSA C22.2 No. 14-M91
CE	EN50178 and EN61800-3
CTick	AS / NZS 2064, Group 1, Class A

Important: For this product to be CE and CTick compliant, the shield of the drive cable must be terminated as described on Page 2-2.

NOTE: This is a product of category C2 according to IEC 61800-3. In a domestic environment this product may cause radio interference in which case supplementary mitigation measures may be required.

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Converter Parameters

Appendix B provides information about the 1203-USB converter parameters.

Topic	Page
Parameter List for DPI Drives	B-1
Parameter List for DSI Drives	B-2
Parameter List for SCANport Drives	B-4

Parameter List for DPI Drives

No.	Name and Description	Details
01	**[DPI Port]** Displays the port on the host drive to which the converter is connected.	Default: 0 Minimum: 0 Maximum: 7 Type: Read Only
02	**[Reset Module]** No action if set to "Ready." Resets the converter if set to "Reset Module." Restores the converter to its factory-default settings if set to "Set Defaults." This parameter is a command. It will be reset to "0 = Ready" after the command has been performed. **ATTENTION:** Risk of injury or equipment damage exists. If the converter is transmitting I/O that controls the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a connected converter.	Default: 0 = Ready Values: 0 = Ready 1 = Reset Module 2 = Set Defaults Type: Read/Write Reset Required: No
03	**[Clear DF1 Counts]** No action if set to "Ready." Resets the DF1 statistical **Parameter 04 - [DF1 Packets Sent]** and **Parameter 05 - [DF1 Packets Rcvd]** to 0 if set to "Clear Counts." This parameter is a command. It will be reset to "0 = Ready" after a "Clear Counts" command has been performed.	Default: 0 = Ready Values: 0 = Ready 1 = Clear Counts Type: Read/Write Reset Required: No
04	**[DF1 Packets Sent]** Displays the number of DF1 packets sent by the converter. The value of this parameter is normally approximately equal to the value of **Parameter 05 - [DF1 Packets Rcvd]**.	Default: 0 Minimum: 0 Maximum: 4294967295 Type: Read Only
05	**[DF1 Packets Rcvd]** Displays the number of DF1 packets received by the converter. The value of this parameter is normally approximately equal to the value of **Parameter 04 - [DF1 Packets Sent]**.	Default: 0 Minimum: 0 Maximum: 4294967295 Type: Read Only

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No.	Name and Description	Details
06	**[Interface Mode]** Sets the interface operating mode: Auto — The converter will automatically run DPI if connected to a DPI drive, or SCANport if connected to a SCANport drive. SCANport — The converter will perform SCANport services only. Set this parameter to "Auto" (default) unless you are using DriveTools32 version 2.xx software and you are connected to a DPI drive. In this case, use the "SCANport" setting.	Default: 0 = Auto Values: 0 = Auto 1 = SCANport Type: Read/Write Reset Required: Yes
07	**[DPI Data Rate]** Displays the data rate used by the DPI host drive. This data rate is set in the drive, and the converter autobauds to it.	Default: 0 Values: 0 = 125 kbps 1 = 500 kbps Type: Read Only
08	**[Ref/Fdbk Size]** Displays the size of the Reference/Feedback. The host drive determines the size of the Reference/Feedback. The converter automatically uses the correct size.	Default: 0 = 16-bit Value: 0 = 16-bit 1 = 32-bit Type: Read Only
09	**[Datalink Size]** Displays the size of each Datalink word. The host drive determines the size of Datalinks.	Default: 0 = 16-bit Values: 0 = 16-bit 1 = 32-bit Type: Read Only

Parameter List for DSI Drives

No.	Name and Description	Details
01	**[Adapter Cfg]** Sets the operation of the converter on DSI. Leave at "Auto" (setting) when used with software tools. **Important: Parameter 01 - [Adapter Cfg]** must be set to "Auto" (default) for DriveExplorer to operate. HyperTerminal can be used if this parameter needs to be changed (see Using Terminal Emulation Software on page 3-11).	Default: 0 = Auto Values: 0 = Auto 1 = Master 2 = Slave 3 = RTU Master 4 = RTU Passthru Type: Read/Write Reset Required: Yes
02	**[Reset Module]** No action if set to "Ready." Resets the converter if set to "Reset Module." Restores the converter to its factory-default settings if set to "Set Defaults." This parameter is a command. It will be reset to "0 = Ready" after the command has been performed. **ATTENTION:** Risk of injury or equipment damage exists. If the converter is transmitting I/O that controls the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a connected converter.	Default: 0 = Ready Values: 0 = Ready 1 = Reset Module 2 = Set Defaults Type: Read/Write Reset Required: No

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No.	Name and Description	Details
03	**[Clear DF1 Counts]** No action if set to "Ready." Resets the DF1 statistical **Parameter 04 - [DF1 Packets Sent]** and **Parameter 05 - [DF1 Packets Rcvd]** to 0 if set to "Clear Counts." This parameter is a command. It will be reset to "0 = Ready" after the command has been performed.	Default: 0 = Ready Values: 0 = Ready 1 = Clear Counts Type: Read/Write Reset Required: No
04	**[DF1 Packets Sent]** Displays the number of DF1 packets sent by the converter. The value of this parameter is normally approximately equal to the value of **Parameter 05 - [DF1 Packets Rcvd]**.	Default: 0 Minimum: 0 Maximum: 65535 Type: Read Only
05	**[DF1 Packets Rcvd]** Displays the number of DF1 packets received by the converter. The value of this parameter is normally approximately equal to the value of **Parameter 04 - [DF1 Packets Sent]**.	Default: 0 Minimum: 0 Maximum: 65535 Type: Read Only
06	**[RTU DSI Addr Cfg]** Sets the node address of the converter for use with the converter operating mode set with **Parameter 01 - [Adapter Cfg]**. In Auto, Master or Slave mode, the converter node address can be any valid value. In RTU Master or RTU Master Passthru mode, the converter node address must match the address of any drive on the network. Each network drive address, set using drive parameter 104 - [Comm Node Addr], must be unique. In any case, the RTU DSI address is a decimal value.	Default: 1 Minimum: 1 Maximum: 247 Type: Read/Write Reset Required: Yes
07	**[RTU DSI Addr Act]** Displays the node address of the drive that the converter is communicating with when the converter is set to RTU Master or RTU Passthru mode using **Parameter 01 - [Adapter Cfg]**.	Default: 1 Minimum: 1 Maximum: 247 Type: Read Only
08	**[Adapter Type]** Displays the present operating mode for the converter.	Default: 0 = Master Values: 0 = Master 1 = Slave 2 = RTU Master 3 = RTU Passthru Type: Read Only

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Parameter List for SCANport Drives

No.	Name and Description	Details
01	**[Adapter Port]** Displays the port on the host drive to which the converter is connected.	Default: 0 Minimum: 0 Maximum: 7 Type: Read Only
02	**[Reset Module]** No action if set to "Ready." Resets the converter if set to "Reset Module." Restores the converter to its factory-default settings if set to "Set Defaults." This parameter is a command. It will be reset to "0 = Ready" after the command has been performed.	Default: 0 = Ready Values: 0 = Ready 1 = Reset Module 2 = Set Defaults Type: Read/Write Reset Required: No
	ATTENTION: Risk of injury or equipment damage exists. If the converter is transmitting I/O that controls the drive (indicated by a solid green diamond LED), the drive may fault when you remove or reset the converter. Determine how your drive will respond before removing or resetting a connected converter.	
03	**[Clear DF1 Counts]** No action if set to "Ready." Resets the DF1 statistical **Parameter 04 - [DF1 Packets Sent]** and **Parameter 05 - [DF1 Packets Rcvd]** to 0 if set to "Clear Counts." This parameter is a command. It will be reset to "0 = Ready" after a "Clear Counts" command has been performed.	Default: 0 = Ready Values: 0 = Ready 1 = Clear Counts Type: Read/Write Reset Required: No
04	**[DF1 Packets Sent]** Displays the number of DF1 packets sent by the converter. The value of this parameter is normally approximately equal to the value of **Parameter 05 - [DF1 Packets Rcvd]**.	Default: 0 Minimum: 0 Maximum: 65535 Type: Read Only
05	**[DF1 Packets Rcvd]** Displays the number of DF1 packets received by the converter. The value of this parameter is normally approximately equal to the value of **Parameter 04 - [DF1 Packets Sent]**.	Default: 0 Minimum: 0 Maximum: 65535 Type: Read Only
06	**[Interface Mode]** Sets the interface operating mode: Auto — The converter will automatically run DPI if connected to a DPI drive, or SCANport if connected to a SCANport drive. SCANport — The converter will perform SCANport services only. Set this parameter to "Auto" (default) unless you are using DriveTools32 version 2.xx software and you are connected to a DPI drive. In this case, use the "SCANport" setting.	Default: 0 = Auto Values: 0 = Auto 1 = SCANport Type: Read/Write Reset Required: Yes

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Flash Updates

Appendix C provides information on flash updating host or peripheral product firmware.

Topic	Page
Preparing for a Flash Update	C-1
Performing a Flash Update with DriveExplorer	C-2
Performing a Flash Update with DriveExecutive	C-7
Performing a Flash Update with HyperTerminal	C-12
Troubleshooting HyperTerminal Flash Problems	C-14

Preparing for a Flash Update

Please take the following precautions to ensure a successful flash update:

- Obtain the new firmware version from Rockwell Automation, Inc. Save it to the hard drive of the computer. Do not attempt to perform a flash update from a removable storage device or a network.
- Read all instructions supplied with the new firmware file.
- Use a computer running terminal emulation software that supports Xmodem transfers (for example, HyperTerminal). In this manual, we show how to use HyperTerminal.
- Record parameter values in the device that will be flashed. Updates may cause parameters to revert to their default settings.
- Ensure that the host drive (e.g., a PowerFlex 70 EC) is stopped.
- Close all programs except the terminal emulation program that you are using to flash update the device.
- Disable the screen saver and anti-virus programs so that they do not start during the flash update.
- Depending on the type of drive, verify this parameter setting:
  - DPI drives: **Parameter 06 - [Interface Mode]** set to “Auto”
  - DSI drives: **Parameter 01 - [Adapter Cfg]** set to “Auto”
  - SCANport drives: **Parameter 06 - [Interface Mode]** set to “SCANport”

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Performing a Flash Update with DriveExplorer

DriveExplorer version 4.04 or higher can perform flash updates on products that use flash memory and implement DPI or DSI, such as PowerFlex 7-Class drives and peripherals or PowerFlex 4-Class peripherals. PowerFlex 4-Class drives can only be flash updated using a AK-U9-FLSH1 flash kit. DriveExplorer cannot be used to flash update products that implement SCANport.

This flash update procedure uses a PowerFlex 70 Enhanced Control drive as the example device being flashed. When flashing other devices, screens associated with that device will be different than those shown.

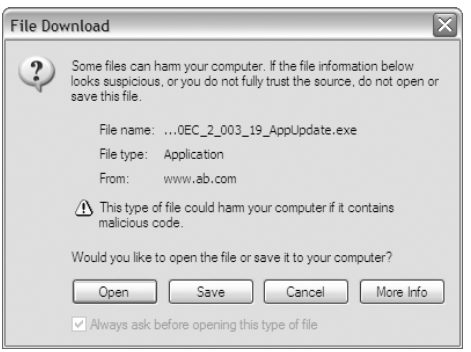
1. Visit the following Allen-Bradley web site to obtain the appropriate firmware update for the device:

   http://www.ab.com/support/abdrives/webupdate/

   At this web site, click on the device to access all of its firmware updates. Then select **Firmware Updates > Application Firmware Updates (or vx.xxx Flash Kit) > vx.xxx Flash Kit**.

2. Click on the appropriate flash kit version to open the File Download screen (Figure C.1).

Figure C.1 File Download Screen


File Download
Some files can harm your computer. If the file information below looks suspicious, or you do not fully trust the source, do not open or save this file.
File name: ...0EC_2_003_19_AppUpdate.exe
File type: Application
From: www.ab.com
This type of file could harm your computer if it contains malicious code.
Would you like to open the file or save it to your computer?
Open
Save
Cancel
More Info
Always ask before opening this type of file

Click **Open** to launch the firmware installation tool. Then click **Next >** to launch the ControlFLASH wizard to install the device's firmware update on your desktop or laptop computer. Follow the instructions on the ControlFLASH wizard screens.

Important: In the last screen, the ControlFLASH Setup Complete screen (Figure C.2), uncheck both boxes and click **Finish**.

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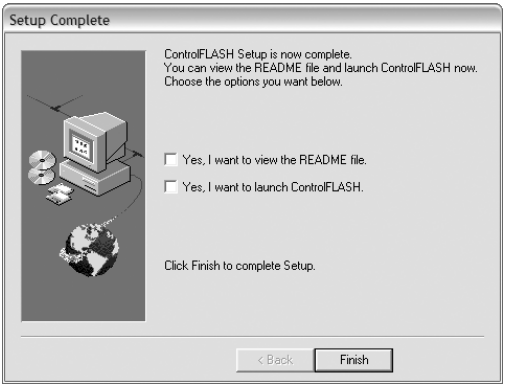
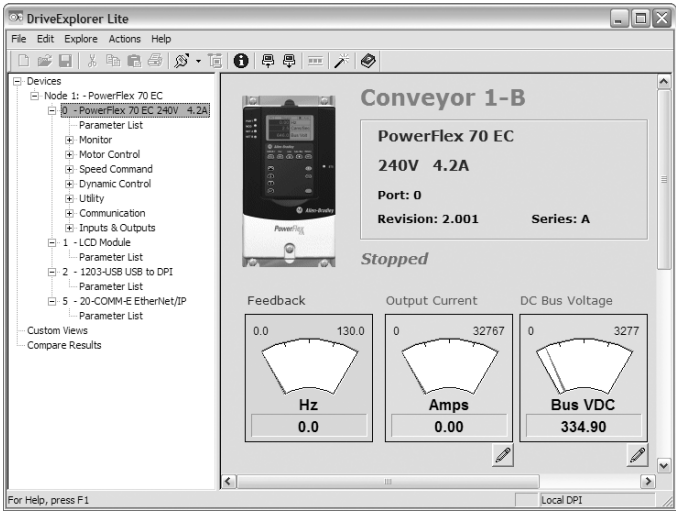
Figure C.2 ControlFLASH Setup Complete Screen


Setup Complete
ControlFLASH Setup is now complete.
You can view the README file and launch ControlFLASH now.
Choose the options you want below.
Yes, I want to view the README file.
Yes, I want to launch ControlFLASH.
Click Finish to complete Setup.
< Back
Finish

3. Establish communications between the drive connected to the 1203-USB converter and the computer. For this procedure, please refer to Using DriveExplorer on page 3-4 .

4. In the DriveExplorer application window (Figure C.3), click on the device to be flash updated (for this example, a PowerFlex 70 (Enhanced Control drive).

Figure C.3 DriveExplorer Window



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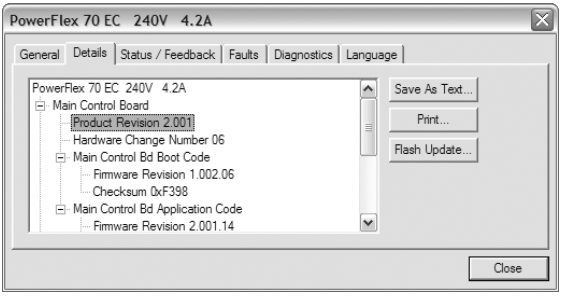
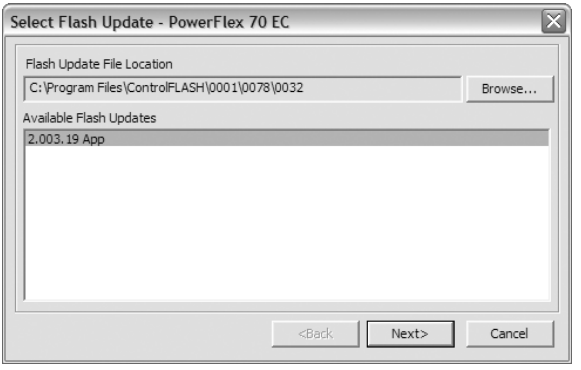
5. Select **Explore > Device Properties…** to display the device's information screen. Then click the **Details** tab to show a screen (Figure C.4) with the device's firmware revision information.

Figure C.4 Details Tab Screen



6. In the Details tab screen, click the **Flash Update…** button to open the Select Flash Update screen (Figure C.5).

Figure C.5 Select Flash Update Screen



7. In the Available Flash Updates window on this screen, select the appropriate firmware version from the list (for this example, 2.003.19 App). Then click **Next>** to continue. The Confirm Flash Update warning screen (Figure C.6) appears.

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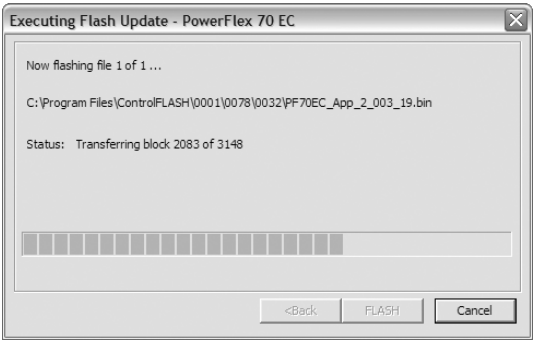
Figure C.6 Confirm Flash Update Warning Screen

Confirm Flash Update - PowerFlex 70 EC
Flash Update will install new firmware in the device and could change device settings to defaults. It is recommended that you save device settings to your PC prior to flash update. After flash update, you must verify device settings.
If you are not ready to flash update, click Cancel.
Do not interrupt communications with the device or attempt to remove power from the device during Flash Update. Failure to comply may cause device damage.
Prior to and during Flash Update, all devices at the node must be stopped. If you are ready to flash update, click Flash.
Current Revision: 2.001
New Revision: 2.003.19 App
<Back
FLASH
Cancel

8. Click **FLASH** to start the flash update (Figure C.7). If an advisory dialog box appears, follow the instructions.

ATTENTION: Risk of permanent equipment damage exists. Once a flash update has been started, do not remove power from the drive until after the download has completed and the Diamond status indicator on the 1203-USB converter becomes FLASHING GREEN. If power is removed before this occurs, the converter may be permanently damaged. A converter that has been damaged in this way cannot be repaired.

Figure C.7 Executing Flash Update Progress Screen



9. When the flash update is completed, the message window in the Executing Flash Update screen changes to indicate that flash update was completed (Figure C.8).

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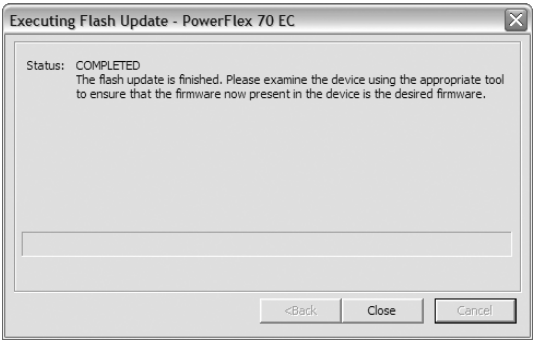
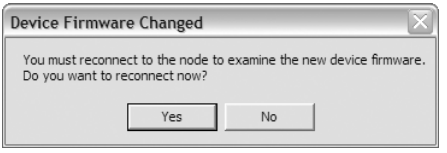
Figure C.8 Executing Flash Update Completed Screen


Executing Flash Update - PowerFlex 70 EC
Status: COMPLETED
The flash update is finished. Please examine the device using the appropriate tool to ensure that the firmware now present in the device is the desired firmware.
<Back
Close
Cancel

Click **Close** to exit the Flash Update Completed screen. The Device Firmware Changed dialog box (Figure C.9) will appear.

Figure C.9 Device Firmware Changed Dialog Box


Device Firmware Changed
You must reconnect to the node to examine the new device firmware.
Do you want to reconnect now?
Yes
No

10. DriveExplorer will prompt you to reconnect since the device may have changed its database because of the flash update. Click **Yes** to reconnect to the device.

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Performing a Flash Update with DriveExecutive

DriveExecutive version 1.xx or higher can perform flash updates on products that use flash memory and implement DPI or DSI, such as PowerFlex 7-Class drives and peripherals or PowerFlex 4-Class peripherals. PowerFlex 4-Class drives can only be flash updated using a AK-U9-FLSH1 flash kit. DriveExecutive cannot be used to flash update products that implement SCANport.

This flash update procedure uses a PowerFlex 70 Enhanced Control drive as the example device being flashed. When flashing other devices, screens associated with that device will be different than those shown.

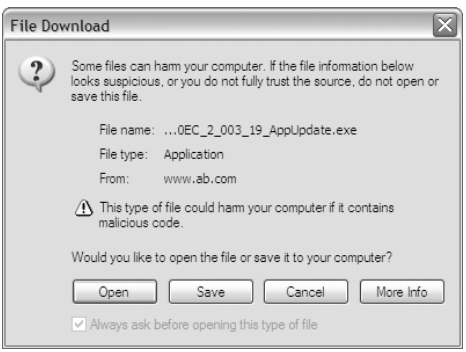
1. Visit the following Allen-Bradley web site to obtain the appropriate firmware update for the device:

   http://www.ab.com/support/abdrives/webupdate/

   At this web site, click on the device to access all of its firmware updates. Then select **Firmware Updates > Application Firmware Updates (or vx.xxx Flash Kit) > vx.xxx Flash Kit**.

2. Click on the appropriate flash kit version to open the File Download screen (Figure C.10).

Figure C.10 File Download Screen


File Download
Some files can harm your computer. If the file information below looks suspicious, or you do not fully trust the source, do not open or save this file.
File name: ...0EC_2_003_19_AppUpdate.exe
File type: Application
From: www.ab.com
This type of file could harm your computer if it contains malicious code.
Would you like to open the file or save it to your computer?
Open
Save
Cancel
More Info
Always ask before opening this type of file

Click **Open** to launch the firmware installation tool. Then click **Next >** to launch the ControlFLASH wizard to install the device's firmware update on your desktop or laptop computer. Follow the instructions on the ControlFLASH wizard screens.

Important: In the last screen, the ControlFLASH Setup Complete screen (Figure C.11), uncheck both boxes and click **Finish**.

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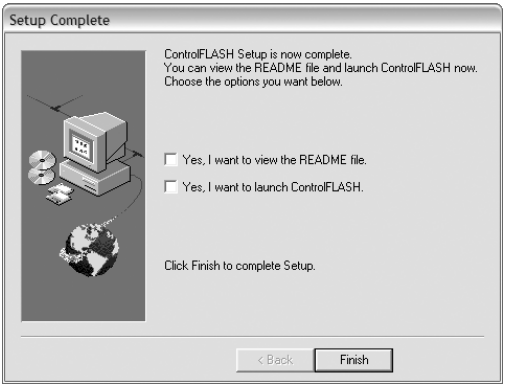
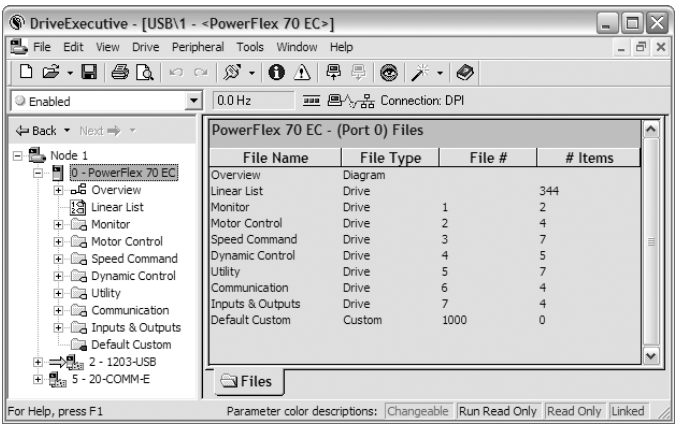
Figure C.11 ControlFLASH Setup Complete Screen


Setup Complete
ControlFLASH Setup is now complete.
You can view the README file and launch ControlFLASH now.
Choose the options you want below.
Yes, I want to view the README file.
Yes, I want to launch ControlFLASH.
Click Finish to complete Setup.
< Back
Finish

3. Establish communications between the drive connected to the 1203-USB converter and the computer. For this procedure, please refer to Using DriveExecutive on page 3-6.

4. With the DriveExecutive window (Figure C.12) displayed, click on the device to be flash updated (for this example, a PowerFlex 70 Enhanced Control drive).

Figure C.12 DriveExecutive Window


DriveExecutive - [USB\1 - <PowerFlex 70 EC>]
File Edit View Drive Peripheral Tools Window Help
Enabled
0.0 Hz
Connection: DPI
Back Next
Node 1
0 - PowerFlex 70 EC
Overview
Linear List
Monitor
Motor Control
Speed Command
Dynamic Control
Utility
Communication
Inputs & Outputs
Default Custom
2 - 1203-USB
5 - 20-COMM-E
PowerFlex 70 EC - (Port 0) Files
File Name | File Type | File # | # Items
Overview | Diagram
Linear List | Drive | | 344
Monitor | Drive | 1 | 2
Motor Control | Drive | 2 | 4
Speed Command | Drive | 3 | 7
Dynamic Control | Drive | 4 | 5
Utility | Drive | 5 | 7
Communication | Drive | 6 | 4
Inputs & Outputs | Drive | 7 | 4
Default Custom | Custom | 1000 | 0
Files
For Help, press F1
Parameter color descriptions: Changeable Run Read Only Read Only Linked

5. Select **Drive > Properties…** to display the device's information screen. Then click the **Component Details** tab to show its related screen (Figure C.13).

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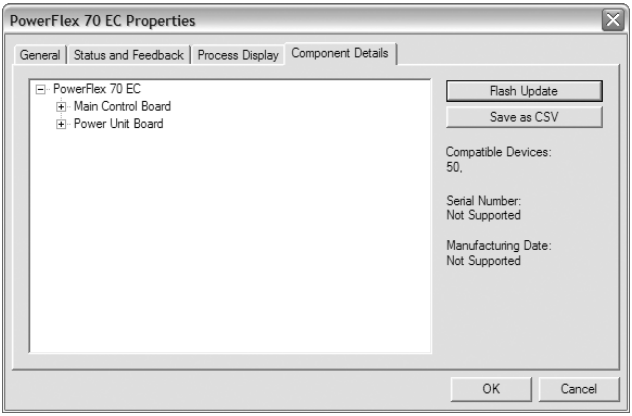
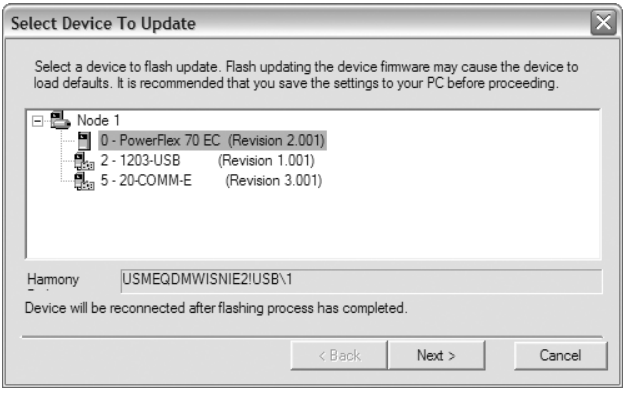
Figure C.13 Component Details Tab Screen



6. In the Component Details tab screen, click the **Flash Update** button to open the Select Device To Update screen (Figure C.14), which shows the device's firmware revision information.

Figure C.14 Select Device To Update Screen


Select Device To Update
Select a device to flash update. Flash updating the device firmware may cause the device to load defaults. It is recommended that you save the settings to your PC before proceeding.
Node 1
0 - PowerFlex 70 EC (Revision 2.001)
2 - 1203-USB (Revision 1.001)
5 - 20-COMM-E (Revision 3.001)
Harmony
USMEQDMWISNIE2!USB\1
Device will be reconnected after flashing process has completed.
< Back
Next >
Cancel

Click on the device to be flashed (for this example, a PowerFlex 70 Enhanced Control drive), and then click **Next >** to continue. The Select Flash Update screen (Figure C.15) appears.

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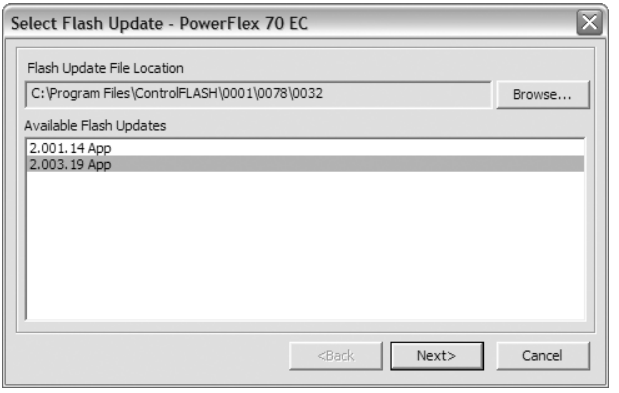
Figure C.15 Select Flash Update Screen



7. Select the desired firmware version from the Available Flash Updates list (for this example, 2.003.19 App). Then click **Next >** to continue. The Confirm Flash Update warning screen (Figure C.16) appears.

Figure C.16 Confirm Flash Update Warning Screen

Confirm Flash Update - PowerFlex 70 EC
Flash Update will install new firmware in the device and could change device settings to defaults. It is recommended that you save device settings to your PC prior to flash update. After flash update, you must verify device settings.
If you are not ready to flash update, click Cancel.
Do not interrupt communications with the device or attempt to remove power from the device during Flash Update. Failure to comply may cause device damage.
Prior to and during Flash Update, all devices at the node must be stopped. If you are ready to flash update, click Flash.
Current Revision: 2.001
New Revision: 2.003.19 App
<Back
FLASH
Cancel

8. Click **FLASH** to start the flash update. The Executing Flash Update screen (Figure C.17) appears.

ATTENTION: Risk of permanent equipment damage exists. Once a flash update has been started, do not remove power from the drive until after the download has completed and the Diamond status indicator on the 1203-USB converter becomes FLASHING GREEN. If power is removed before this occurs, the converter may be permanently damaged. A converter that has been damaged in this way cannot be repaired.

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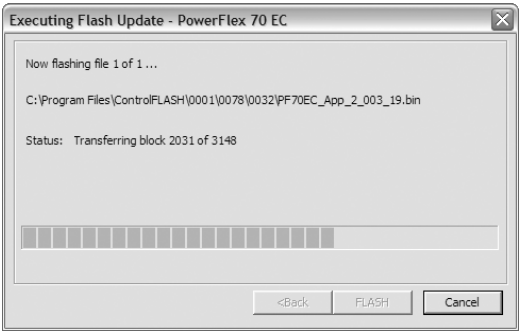
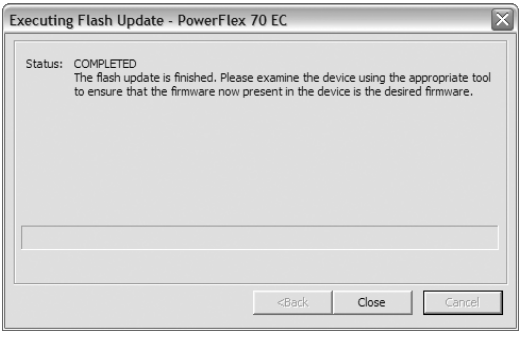
Figure C.17 Executing Flash Update Progress Screen



9. When the flash update is completed, the message window in the Executing Flash Update screen changes to indicate that flash update was completed (Figure C.18).

Figure C.18 Executing Flash Update Completed Screen


Executing Flash Update - PowerFlex 70 EC
Status: COMPLETED
The flash update is finished. Please examine the device using the appropriate tool to ensure that the firmware now present in the device is the desired firmware.
<Back
Close
Cancel

Click **Close** to exit the Flash Update Completed screen. The Select Device To Update screen (Figure C.14) reappears along with the Windows in-process icon (typically, the hourglass icon). Wait for this icon to disappear (approximately 10 seconds).

10. On the Select Device To Update screen, verify that the Revision number shown now matches the firmware version flashed into the device.

11. Click **Cancel** to close the Select Device To Update screen. Then click **Cancel** again to close the device's information screen. The DriveExecutive online window is now ready for use.

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Performing a Flash Update with HyperTerminal

1. In the main menu (Figure 3.11), press **3** to flash upgrade.

   For connected DSI or SCANport drives, you can only update the firmware in the converter. The screen in Figure C.20 will immediately appear.

   For connected DPI drives, a menu appears (Figure C.19) for you to select the device that you want to update.

Figure C.19 Example DPI Flash Menu

```
Flash Upgrade. Enter Number for Selection.
0 > PowerFlex 70 EC
1 > LCD Module
2 > This 1203-USB
5 > 20-COMM-D
```

After you select a device by typing its number, a line appears to confirm that you selected the right device (for example, “You have chosen to update -- 0 > PowerFlex 70 EC”) and the following text appears:

Figure C.20 Flash Menu

```
To update the Flash memory, you need a terminal
program capable of downloading a binary file using
the XMODEM protocol and a Flash update file from
Rockwell Automation. When you press 'Y' to signal
that you are ready to proceed, the terminal
program will start displaying the letter 'C'. This
signals the XMODEM protocol that the download may
proceed. You then have one minute to start the
transfer. Press CTRL-X to cancel an update started
by mistake. Are you ready to proceed? (Y/N)
```

ATTENTION: Risk of injury or equipment damage exists. When you perform a flash update, the drive will fault if it is receiving control I/O from the converter. Verify that the drive has stopped safely or is receiving control I/O from an alternate source before beginning a flash update.

ATTENTION: Risk of equipment damage exists. If you interrupt a flash procedure that is updating boot code, the device may become inoperable. To prevent this damage, follow the instructions provided with the new firmware file and do not interrupt a flash procedure while boot code is being flashed.

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2. If the flash update can be completed safely, type **Y**. The letter “C” repeatedly appears. It is the Xmodem prompt and continues to appear until you send a binary file.

   Important: Press Ctrl + X to cancel a flash update procedure.

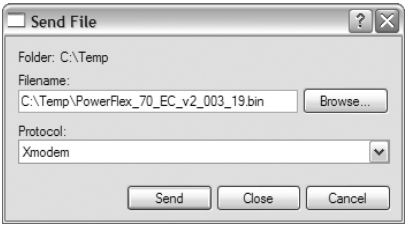
3. Select **Transfer > Send File** to display the Send File screen (Figure C.21).

4. Click **Browse** and navigate to the flash file.

5. Double-click the file. Its name appears in the Filename box (see Figure C.21).

6. In the Protocol box, select “Xmodem.”

Figure C.21 Example Send File Screen



7. Click **Send**. A dialog box appears and reports the progress of the download. When it is complete, the message “Operation Complete” appears.

   Important: Keep the device powered for 15 seconds after the operation has completed.

8. Press the Enter key to return to the main menu.

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Troubleshooting HyperTerminal Flash Problems

Description	Corrective Action
The “Transfer Cancelled by Remote System” message appears and the flash is not completed.	• Restart HyperTerminal and repeat the flash procedure. • If you are using Windows NT 4.0, install SP3 or later. Windows NT service packs are available from the Microsoft web site: http://www.microsoft.com. • Download a HyperTerminal Private Edition update from the Hilgraeve web site: http://www.hilgraeve.com. (Please note that there is a license requirement with this software.) Then, perform the flash procedure again.
The “Xmodem File Send” for dialog box appears, but the flash file is not transferred.	• Verify that you have selected the Xmodem protocol in the Send File screen. • Verify that the new file is on your computer hard drive. Do not attempt to flash from a removable storage device or a network. • Verify that you are sending the file within 60 seconds of pressing “Y” to confirm that you want to perform the flash.
After completing a flash, you are unable to communicate with the converter. For example, meaningless text appears on the HyperTerminal screen.	Verify that the software tool’s virtual COM port rate is set to 115200. If parameters are changed during a flash update, all parameters are set to their default settings.
You are unable to initiate a flash to a DPI host or peripheral product.	• DPI/SCANport Drives: Verify that converter **Parameter 06 - [Interface Mode]** is set to “Auto” (default setting. • DSI Drives: Verify that converter **Parameter 01 - [Adapter Cfg]** is set to “Auto.”

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Using RTU Master Mode

Appendix D provides information about using the 1203-USB converter in RTU Master mode.

Topic	Page
Establishing Communications	D-1
Configuring the Drive Parameters	D-2
Configuring the Converter for RTU Master Mode	D-4
Network Wiring	D-6
Accessing Drives on the RTU Master Network	D-8

With the converter in RTU Master mode, you can monitor, configure, and control up to 32 PowerFlex 4-Class drives using one of the Allen-Bradley drive software tools.

TIP: A total of 247 drives can be supported on the RTU Master network when RS-485 repeaters are installed.

Important: All PowerFlex 40 and PowerFlex 400 drives on an RTU Master network must have an open internal Port 1. Thus, a 22-COMM-* adapter cannot be connected to this port via the Internal Interface ribbon cable.

When a drive faults in an RTU Master network, all other drives remain operational and unaffected.

Establishing Communications

Establish communications between the drive connected to the 1203-USB converter and the computer. For this procedure, please refer to the respective section in Chapter 3 that corresponds to the drive software tool you are using:

- Using DriveExplorer on page 3-4
- Using DriveExecutive on page 3-6

Important: When using DriveExplorer to connect to drives on an RTU Master network, use only DriveExplorer Full since DriveExplorer Lite does not support multi-drive connectivity.

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Configuring the Drive Parameters

When setting drive parameters for the following functions to enable operation on an RTU Master network, use each drive's integral HIM or use the 1203-USB converter and DriveExplorer Full or DriveExecutive. When using the converter, electrically connect the converter to the computer and the first drive, establish communication with the drive, and use a drive software tool to set its parameters. Then electrically connect the converter to the next drive and repeat the process until the parameters in all of the drives have been set.

Setting Comm Data Rates

For each drive to be networked (including Drive 1 connected to the 1203-USB converter), set drive parameter 103 - [Comm Data Rate] to "4" (19.2K).

Setting Drive Addresses

1. For Drive 1 connected to the 1203-USB converter, set drive parameter 104 - [Comm Node Addr] to match the converter node address (default = 1) set with **Parameter 06 - [RTU DSI Addr Cfg]**.

   Important: When setting the 1203-USB converter node address, do not use a value higher than "77" octal (or 63 decimal when using DriveExecutive).

2. For each remaining drive to be networked, set drive parameter 104 - [Comm Node Addr] to a unique address.

Setting Comm Loss Action

For each drive to be networked (including Drive 1 connected to the 1203-USB converter), set drive parameter 105 - [Comm Loss Action] to either "1" (Coast to Stop) or "2" (Stop).

Power Cycle All Drives

Power cycle each drive so that all new settings established in this section will take effect.

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For your convenience, use the blank list below to note the settings for each drive to be networked.

Network Drive Number	Address Setting for Drive Parameter 104 - [Drive Addr Cfg]	Comm Fault Setting for Drive Parameter 105 - [Comm Loss Action]
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		

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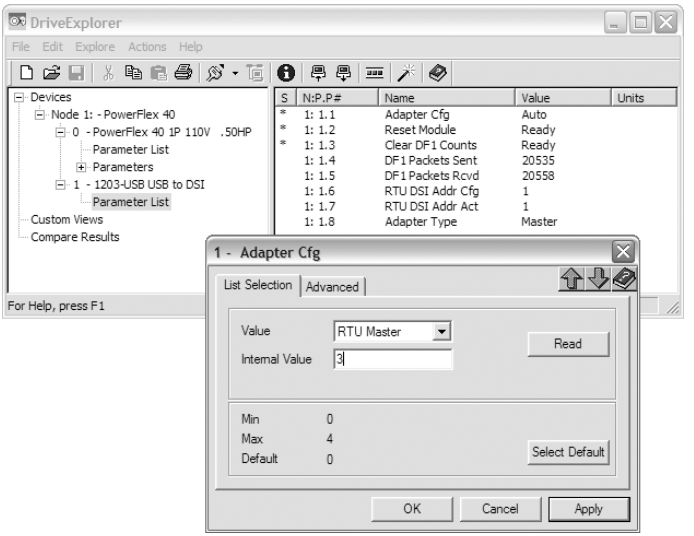
Configuring the Converter for RTU Master Mode

Using DriveExplorer (Full Version Only)

1. On the DriveExplorer 1203-USB Parameter List screen (Figure D.1), double-click converter **Parameter 01 - [Adapter Cfg]** and set its value to "3 = RTU Master."

Figure D.1 DriveExplorer 1203-USB Parameter List Screen



2. Remove power from the drive to which the 1203-USB converter is connected. This temporarily ends communications. Then electrically connect all drives to create the RTU Master network. Refer to Network Wiring on page D-6 for details.

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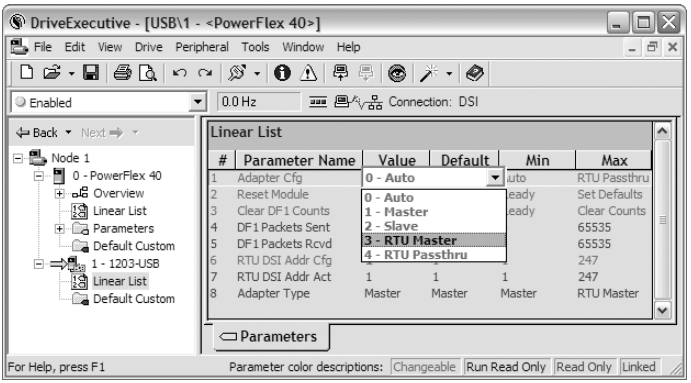
Using DriveExecutive

1. In the Value column of the DriveExecutive 1203-USB Linear List screen (Figure D.2), click on the converter **Parameter 01 - [Adapter Cfg]** pulldown list and set its value to "3 = RTU Master."

Figure D.2 DriveExecutive 1203-USB Linear List Screen


DriveExecutive - [USB\1 - <PowerFlex 40>]
File Edit View Drive Peripheral Tools Window Help
Enabled
0.0 Hz
Connection: DSI
Back Next
Node 1
0 - PowerFlex 40
Overview
Linear List
Parameters
Default Custom
1 - 1203-USB
Linear List
Default Custom
Linear List
Parameter Name Value Default Min Max
1 Adapter Cfg 0 - Auto RTU Passthru
2 Reset Module Set Defaults
3 Clear DF1 Counts Clear Counts
4 DF1 Packets Sent 65535
5 DF1 Packets Rcvd 65535
6 RTU DSI Addr Cfg 247
7 RTU DSI Addr Act 1 1 1 247
8 Adapter Type Master Master Master RTU Master
0 - Auto
1 - Master
2 - Slave
3 - RTU Master
4 - RTU Passthru
Parameters
For Help, press F1
Parameter color descriptions: Changeable Run Read Only Read Only Linked

2. Remove power from the drive to which the 1203-USB converter is connected. This temporarily ends communications. Then electrically connect all drives to create the RTU Master network. Refer to Network Wiring on page D-6 for details.

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Network Wiring

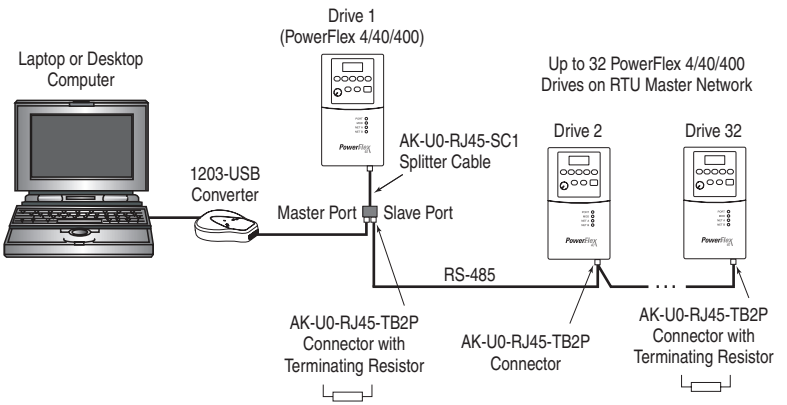
When wiring an RTU Master network, refer to the network wiring example shown in Figure D.3. Connect the first PowerFlex 4-Class drive (Drive 1) on the network to the 1203-USB converter using an AK-U0-RJ45-SC1 splitter cable. Connect its male end into Port 2 on the bottom of the drive. The 1203-USB converter must be connected to the Master port (identified by the letter “M” at the port) of the splitter cable.

Important: Only one splitter cable can be used on the network, and it must be used to connect the 1203-USB converter to the first drive.

Using a 22-RJ45CBL-Cxx Communications Cable, or an appropriate twisted pair cable and an AK-U0-RJ45-TB2P terminal block connector (Figure D.4), insert the connector into the splitter cable Slave port (identified by the letter “S” at the port). Then insert the connector on the cable’s other end into Port 2 on the bottom of the second drive (Drive 2).

For all subsequent PowerFlex 4-Class drives (up to 32 drives total on the RTU Master network), daisy-chain them together using the same type of cable and terminal block adapters connected into Port 2 on the bottom of each respective drive.

Figure D.3 Wiring Example for RTU Master Network



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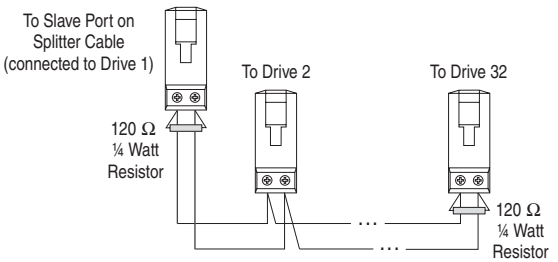
The AK-U0-RJ45-TB2P two-position terminal block connector (Figure D.4) can be used to conveniently daisy-chain the PowerFlex 4-Class drives from Drive 1, which is connected to the 1203-USB converter. Two terminating resistors are also included with terminal block connectors in the AK-U0-RJ45-TB2P kit.

Figure D.4 AK-U0-RJ45-TB2P Terminal Block Connector

Figure D.5 shows a wiring diagram for using the AK-U0-RJ45-TB2P terminal block connectors.

Figure D.5 AK-U0-RJ45-TB2P Connector Wiring Diagram



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Accessing Drives on the RTU Master Network

Using one of the Allen-Bradley drive software tools enables you to monitor, configure, and control any of the drives on the RTU Master network. You can also monitor and configure the 1203-USB converter.

Using DriveExplorer (Full Version Only)

Re-establish communications between the drives on the RTU Master network and the computer (via the 1203-USB converter).

1. Apply power to all of the drives on the RTU Master network.
2. In the DriveExplorer application window (Figure D.6), select **Explore > Connect > Serial to Network…** to display the Network Connection - Node Selection screen (Figure D.7).

Figure D.6 DriveExplorer Full Application Window

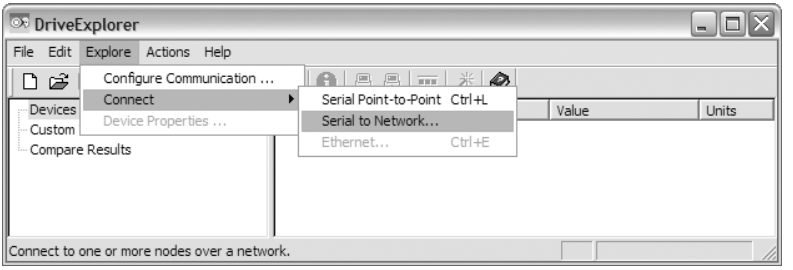
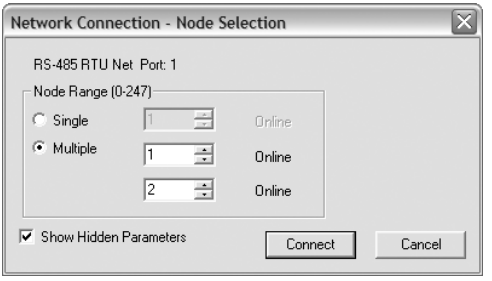


Figure D.7 Network Connection - Node Selection Screen



3. Select the “Multiple” radio button. Then enter the node address for the first network drive (for this example, “1”), and the node address for the last network drive (for this example, “2”) to view all drives

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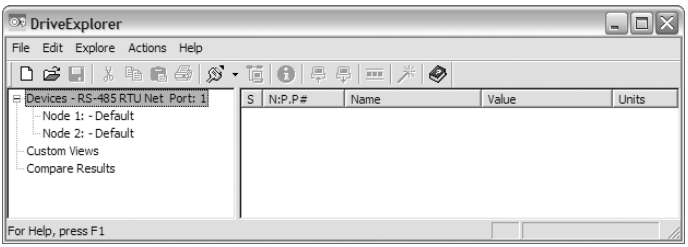
simultaneously in the DriveExplorer online window. Click **Connect** to display the DriveExplorer network treeview (Figure D.8).

TIP: If the network drive node address is valid, “Online” is shown next to the selected address. If a node address is not valid, “Offline” will appear.

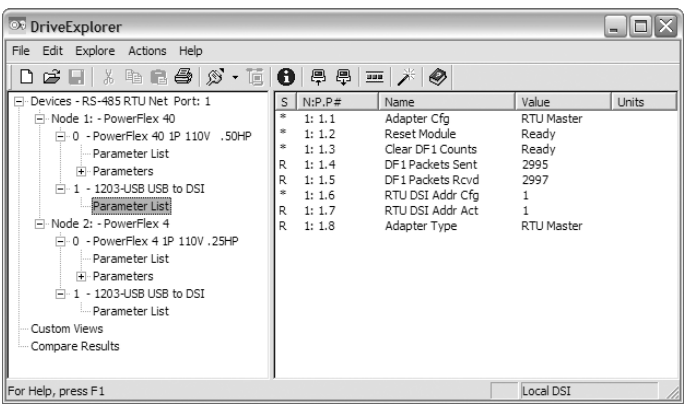
Figure D.8 DriveExplorer Network Treeview



4. Click on each node in the treeview to create its database and identity. Then expand each node to display the connected drive and 1203-USB converter representation (Figure D.9).

TIP: 1203-USB converter representation appears for each drive in the treeview even though there is only one 1203-USB converter on the network. To access the 1203-USB converter parameters, click any 1203-USB Parameter List shown in the treeview.

Figure D.9 DriveExplorer Expanded Network Treeview


DriveExplorer
File Edit Explore Actions Help
Devices - RS-485 RTU Net Port: 1
Node 1: - PowerFlex 40
0 - PowerFlex 40 1P 110V .50HP
Parameter List
Parameters
1 - 1203-USB USB to DSI
Parameter List
Node 2: - PowerFlex 4
0 - PowerFlex 4 1P 110V .25HP
Parameter List
Parameters
1 - 1203-USB USB to DSI
Parameter List
Custom Views
Compare Results
S N:P.P# Name Value Units
* 1: 1.1 Adapter Cfg RTU Master
* 1: 1.2 Reset Module Ready
* 1: 1.3 Clear DF1 Counts Ready
R 1: 1.4 DF1 Packets Sent 2995
R 1: 1.5 DF1 Packets Rcvd 2997
* 1: 1.6 RTU DSI Addr Cfg 1
R 1: 1.7 RTU DSI Addr Act 1
R 1: 1.8 Adapter Type RTU Master
For Help, press F1
Local DSI

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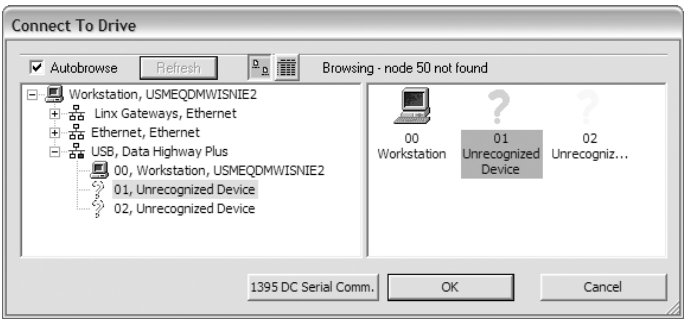
Using DriveExecutive

Re-establish communications between the drives on the RTU Master network and the computer (via the 1203-USB converter).

1. Apply power to all of the drives on the RTU Master network.

2. In the DriveExecutive application window, select **Drive > Connect to Drive…** to display the Connect to Drive window. Then expand the treeview in the left pane to display either the "Unrecognized Device" icons (which represent the drives) or the "DSI" icons. The window should look similar to Figure D.10.

Figure D.10 Connect to Drive Window



3. Select the drive to which you want to connect to (for this example, the node address 01 drive) and click **OK**. DriveExecutive will upload the drive information and display its online window (Figure D.11).

TIP: If the drive information does not exist on the computer or is different than existing information on the computer, DriveExecutive will automatically create a database file for the drive before displaying its online window.

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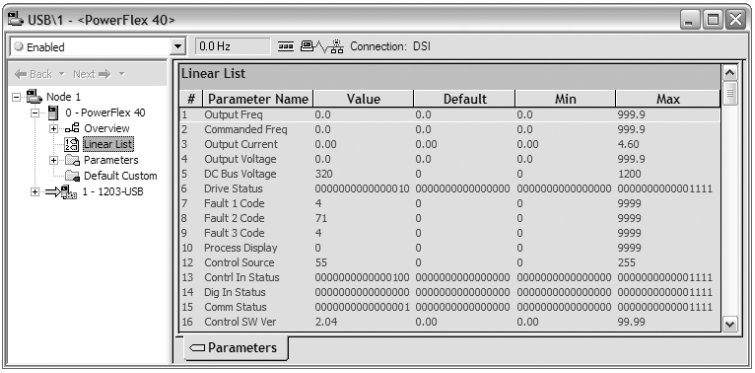
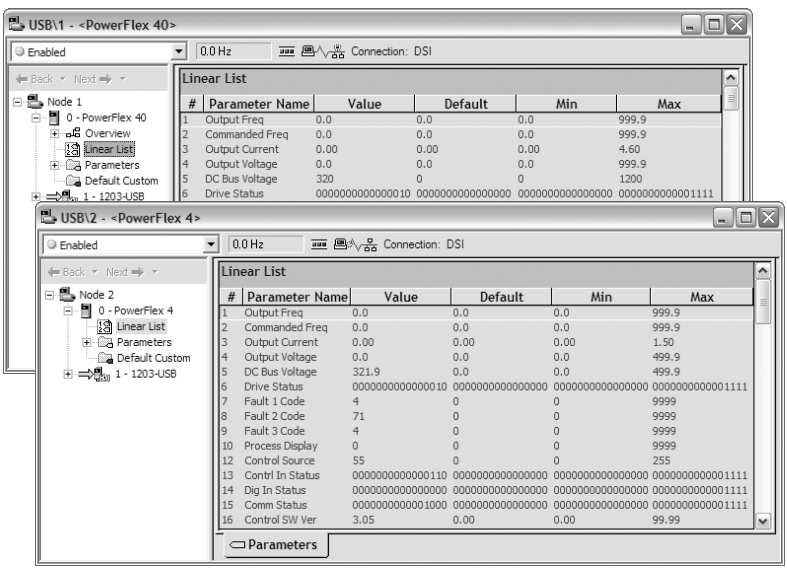
Figure D.11 Drive 1 Online Linear List Window



4. Repeat Steps 2 and 3 for each remaining drive on the network. Figure D.12 shows online windows for each of the drives in this example RTU Master network.

Figure D.12 Drives 1 - 2 Online Linear List Windows



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Notes:

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A

Application Code

Code that runs in the converter after the boot code calls it. Application code performs the normal operations of the converter.

B

BCC (Block Check Character)

An error detection scheme using the 2's complement of the 8-bit sum (modulo-256 arithmetic sum) of all data bytes in a transmission block. It provides a means of checking the accuracy of each message transmission.

Boot Code

Code that runs when the converter first receives power. Boot code checks basic operations and then calls the application code.

Bus Off

This term is applicable to only products that implement DPI or SCANport. A bus off condition occurs when an abnormal rate of errors is detected on the Control Area Network (CAN) bus in a device. The bus-off device cannot receive or transmit messages. This condition is often caused by corruption of the network data signals due to noise or data rate mismatch.

C

ControlFLASH

ControlFLASH is an Allen-Bradley software tool that lets users electronically update firmware on printed circuit boards. The tool takes advantage of the growing use of flash memory (electronic erasable chips) across industrial control products.

Converter

The 1203-USB converter provides an electronic communications interface between any Allen-Bradley product implementing DPI, DSI, or SCANport and a computer with a USB port. This converter uses a full-duplex RS-232 DF1 protocol. The converter may also be referred to as "1203-USB" or "peripheral."

CRC (Cyclic Redundancy Check)

An error detection scheme where all of the characters in a message are treated as a string of bits representing a binary number. This number is divided by a predetermined binary number (a polynomial) and the remainder is appended to the message as a CRC character. A similar operation occurs at the receiving end to prove transmission integrity.

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D

DF1 Protocol

A peer-to-peer link layer protocol that combines features of ANSI X3.28-1976 specification subcategories D1 (data transparency) and F1 (two-way simultaneous transmission with embedded responses).

DF1 Rate

A unit of signaling speed equal to the number of discrete conditions or signal events per second. It is also called “baud rate” or “port rate.”

DPI (Drive Peripheral Interface)

A second generation peripheral communication interface used by various Allen-Bradley drives and power products, such as PowerFlex 7-Class drives. It is a functional enhancement to SCANport.

DPI Peripheral

A device that provides an interface between DPI and a network or user. Peripheral devices are also referred to as “adapters” and “modules.” The 1203-USB converter, 20-COMM-x network communication adapters, and PowerFlex 7-Class HIMs (20-HIM-xxx) are examples of DPI peripherals.

DPI Product

A device that uses the DPI communications interface to communicate with one or more peripheral devices. For example, a motor drive such as a PowerFlex 7-Class drive is a DPI product. In this manual, a DPI product is also referred to as “drive” or “host.”

DriveExplorer Software

DriveExplorer software is a tool for monitoring and configuring Allen-Bradley products and adapters. It can be run on computers running various Microsoft Windows operating systems. DriveExplorer (version 4.04 or higher) can be used to configure the 1203-USB converter and connected drive. A free version of DriveExplorer Lite is included with the serial converter. Information about DriveExplorer software can be accessed at http://www.ab.com/drives/driveexplorer.

DriveTools SP Software

A software suite designed for running on various Microsoft Windows operating systems. This software suite provides a family of tools, including DriveExecutive (version 3.01 or higher), that you can use to program, monitor, control, troubleshoot, and maintain Allen-Bradley products. DriveTools SP (version 1.01 or higher) can be used with Powerflex 7-Class and PowerFlex 4-Class drives, and drives that implement SCANport. Information about DriveTools SP can be accessed at http://www.ab.com/drives/drivetools.

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DSI (Drive Serial Interface)

DSI is based on the Modbus RTU serial communication protocol and is used by PowerFlex 4-Class drives.

DSI Peripheral

A device that provides an interface between DSI and a network or user. Peripheral devices are also referred to as “adapters” and “modules.” The 1203-USB converter, 22-COMM-x network communication adapters, and PowerFlex 4-Class HIMs (22-HIM-xxx) are examples of DSI peripherals.

DSI Product

A device that uses the DSI communications interface to communicate with one or more peripheral devices. For example, a motor drive such as a PowerFlex 4-Class drive is a DSI product. In this manual, a DSI product is also referred to as “drive” or “host.”

F

Flash Update

The process of updating firmware in a device. PowerFlex 7-Class and PowerFlex 4-Class drives and their peripherals can be flash updated using the Allen-Bradley software tool ControlFLASH or the built-in flash capability of DriveExplorer (version 4.04 or higher).

H

HIM (Human Interface Module)

A device that can be used to configure and control a PowerFlex 7-Class drive or a PowerFlex 4-Class drive. PowerFlex-7 Class HIMs (20-HIM-xxx) and PowerFlex 4-Class HIMs (22-HIM-xxx) can be used to configure connected peripherals.

Hold Last

When communications are disrupted (for example, a cable is disconnected), the converter and drive can respond by holding last state. Hold last state results in the drive receiving the last data received via the DF1 connection before the disruption. If the drive was running and using the Reference from the converter, it will continue to run at the same Reference.

N

NVS (Non-Volatile Storage)

NVS is the permanent memory of a device. Devices such as the converter and drive store parameters and other information in NVS so that they are not lost when the device loses power. NVS is sometimes called “EEPROM.”

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P

PCCC (Programmable Controller Communications Commands)

PCCC is the protocol used by some controllers to communicate with devices on a network. Some software products (for example, DriveExplorer and DriveExecutive) also use PCCC to communicate.

Ping

A ping is a message that is sent by a DPI or SCANport drive to its peripheral devices. They use the ping to gather data about the product, including whether it can receive messages and whether they can log in for control.

PowerFlex 4-Class (Component-Class) Drives

The Allen-Bradley PowerFlex 4-Class (Component-Class) family of drives include the PowerFlex 4, PowerFlex 40, and PowerFlex 400. These drives can be used for applications ranging from 0.2 kW (0.25 HP) to 7.5 kW (10 HP). All PowerFlex 4-Class drives implement DSI.

PowerFlex 7-Class (Architecture-Class) Drives

The Allen-Bradley PowerFlex 7-Class (Architecture-Class) family of drives include the PowerFlex 70, PowerFlex 700, PowerFlex 700 Series B, PowerFlex 700H, PowerFlex 700S, and PowerFlex 7000. These drives can be used for applications ranging from 0.37 kW (0.5 HP) to 3000 kW (4000 HP). All PowerFlex 7-Class drives implement DPI.

S

SCANport

A peripheral communications interface used by various Allen-Bradley drives and power products, such as 1305 and 1336 PLUS II drives.

SCANport Peripheral

A device that provides an interface between SCANport and a network or user. Peripheral devices are also referred to as “adapters” and “modules.” The 1203-USB converter, 1203-xxx network communication modules, and HIMs are examples of SCANport peripherals.

SCANport Product

A device that uses the SCANport communications interface to communicate with one or more peripheral devices. For example, a motor drive such as a 1336 PLUS II is a SCANport product. In this manual, a SCANport product is also referred to as “drive” or “host.”

Status Indicators

Status indicators are LEDs that are used to report the status of the converter. There are three status indicators on the converter.

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X

Xmodem

Developed by Ward Christensen in 1978, Xmodem is a protocol used to transfer data. You can use the Xmodem protocol to flash the firmware in the converter or a device connected to it.

Z

Zero Data

When communications are disrupted (for example, a cable is disconnected), the converter and connected drive can respond with zero data. Zero data results in the drive receiving zero as values for command data. If the drive was running and using the Reference from the converter, it will stay running but at zero Reference.

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